CM-28
Task 3.6

Central Regional Planning Council

QC
945
.C83
1982

cfrpc
central florida regional planning council
p.o. box 2089 * 515 east boulevard * bartow * florida 33830

AUTHENTICATED
U.S. GOVERNMENT
INFORMATION
GPO

CENTRAL FLORIDA REGIONAL

HURRICANE SHELTER PLAN

Prepared for

Florida Department of Community Affairs
Bureau of Disaster Preparedness

By

Central Florida Regional Planning Council

October, 1982

The preparation of this report was primarily supported by a grant from the U.S. Office of Coastal Management, National Oceanic and Atmospheric Administration; and the Florida Office of Coastal Management, Department of Environmental Regulation through the Coastal Zone Management Act of 1972, as amended. Supplemental funding was provided by the Florida Department of Community Affairs.

QC 945 .C86 1982

Property Of
NOAA Coastal Services Center
Library

ACKNOWLEDGEMENTS

The Central Florida Regional Planning Council wishes to thank the Department of Community Affairs, Bureau of Disaster Preparedness for its guidance on this project. We also wish to thank the East Central Florida Regional Planning Council and the Withlacoochee Regional Planning Council for their cooperation and assistance. Most importantly, we wish to thank the members of the Central Florida Inland Shelter Advisory Committee (in particular, the Polk County Public Safety Division, the DeSoto County Civil Defense Department, the Hardee County Civil Defense Department, the Highlands County Civil Defense Department, the Okeechobee County Civil Defense Department, the Lakeland Area Chapter of the American Red Cross, the Ridge Area Chapter of the American Red Cross, the Lakeland Police Department and the School Boards and Sheriffs Departments of DeSoto, Hardee, Highlands, Okeechobee and Polk Counties) for their support and guidance.

ABSTRACT

Title:	Central Florida Regional Hurricane Shelter Plan
Publisher and Author:	Central Florida Regional Planning Council
Date of Publication:	October, 1982
Planning Agency:	Central Florida Regional Planning Council
Source of Copies:	Central Florida Regional Planning Council Department of Community Affairs, Bureau of Disaster Preparedness Polk County Public Safety Division DeSoto County Civil Defense Department Hardee County Civil Defense Department Highlands County Civil Defense Department Okeechobee County Civil Defense Department Lakeland Chapter, American Red Cross Ridge Chapter, American Red Cross
Number of pages:	260
Abstract:	The Central Florida Regional Hurricane Evacuation Plan is designed to provide multi-county data on coastal and inland evacuation and sheltering demands under various hurricane scenarios. It is also designed to be part of a coordinated state-wide hurricane evacuation and shelter plan having the goal of minimizing the loss of life and property during a major hurricane.

CENTRAL FLORIDA REGIONAL PLANNING COUNCIL

Gene Bigbie
Chairman

Carrie Oldham
Vice Chairwoman

DESOTO

Eddie Roan
Wayne Hasty
Charles Harrison
Glen Sutphin

HARDEE

Sam Rawls
George Heine
Lawrence Roberts
Harry Lampe

HIGHLANDS

Gene Bigbie
Thelma Pyle
Mary Ellen Ward
William Stephenson

OKEECHOBEE

Charles Harvey
Dowling Watford
Jack Williamson
Clayton White

POLK

Ernie Caldwell
Sam Robinson
Carrie Oldham
James Austin
Russell Swain
Merle Bishop

CFRPC STAFF

James Q. Duane
Executive Director

Glen McLendon
Administrative Director

Nick Stasko
Lisa Cochran
Karen Cumber
D. Jeffrey Dobson

Kathryn Hall
Marcia L. Long
William F. Miller
Jeffrey Spence

TABLE OF CONTENTS

	Page
ABSTRACT	v
CENTRAL FLORIDA REGIONAL PLANNING COUNCIL STAFF	vi
LIST OF TABLES	ix
LIST OF FIGURES	x
LIST OF APPENDICES	xi
I. INTRODUCTION	1
II. OBJECTIVE AND SCOPE	2
A. Study and Area	3
B. Work Tasks	3
III. HURRICANE EVACUATION ORGANIZATION AND AUTHORITY	4
A. National Weather Service	4
1. National Hurricane Center	4
2. Local Weather Service Offices	5
B. State of Florida	6
1. The Governor	6
2. Bureau of Disaster Preparedness	6
C. Local Government	6
1. Elected Officials	6
2. County Disaster Preparedness Agencies	7
3. Municipal Disaster Preparedness Agencies	7
4. Local Government Departments	7
D. American Red Cross	7
E. Coordination of Government Action in Emergency Evacuation Decisions	7
1. Framework for Inter-regional Coordination	8

TABLE OF CONTENTS

(Continued)

		Page
IV.	METHODOLOGY, BACKGROUND, AND RESEARCH	10
	A. Coastal Evacuation and Demand for Shelter	10
	1. Behavioral Assumptions	11
	2. Conversion of Population to Number of Vehicles	13
	3. Regional Traffic/Population Assignments	13
	B. Hurricane Hazards and Vulnerable Populations	14
	C. Central Florida Shelter Facilities	30
	D. Shelter Usage	31
	E. Alternate Public Shelters	60
V.	INTER-REGIONAL EVACUATION	91
VI.	INTRA-REGIONAL EVACUATION	95
VII.	SHELTER CHECKPOINTS	107
VIII.	COORDINATION	109
IX.	RECOMMENDATIONS	110

LIST OF TABLES

Table		Page
1.	Regional Evacuation Scenario Summaries	15
2.	Summary of Highways to be used in Interregional Evacuation	27
3.	Populations Vulnerable to Hurricanes in Central Florida - 1980	30
4.	Primary Shelters Central Florida Region	33
5.	Public Shelter Demand/Adequacy	61
6.	Alternate Shelters Central Florida Region	63
7.	Evacuation Zones	97

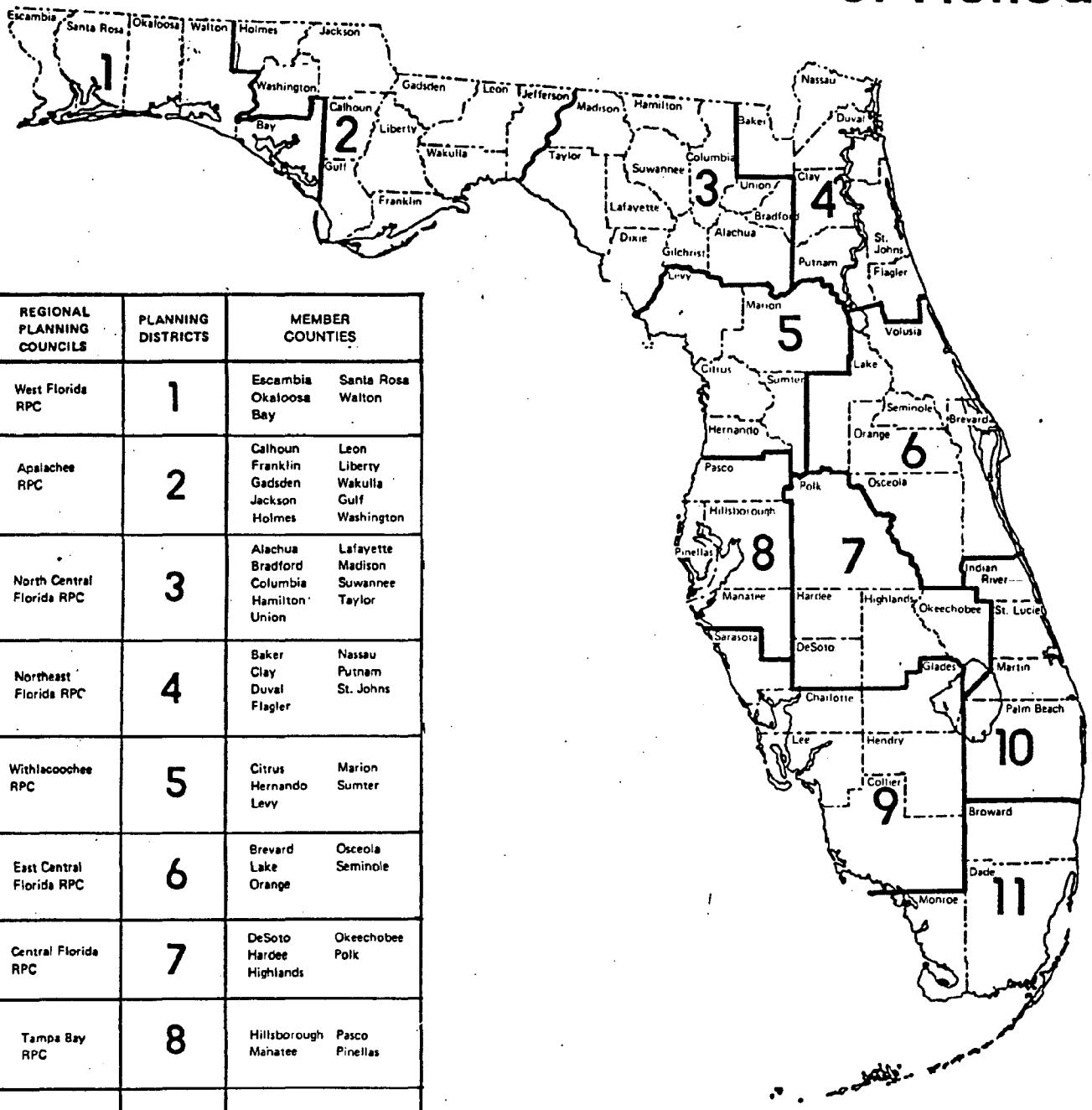
LIST OF FIGURES

Figure		Page
1.	Framework For Inter-Regional Evacuation.	9
2.	Tracks of Regional Scenarios, Three, Five, & Twelve.	12
3.	Regional Scenario Three	POCKET A
4.	Regional Scenario Five	POCKET A
5.	Regional Scenario Twelve	POCKET A
6.	Evacuation Time Concept.	92
7.	Road Network, Central Florida Region, Evacuation Zones/Shelters/Check Points.	POCKET B
8.	DeSoto County - Evacuation Zones/Shelters/ Check Points	POCKET B
9.	Hardee County - Evacuation Zones/Shelters/ Check Points	POCKET B
10.	Okeechobee County - Evacuation Zones/Shelters/ Check Points	POCKET B
11a.	Highlands County - Evacuation Zones/Shelters/ Check Points, Northern Portion	POCKET B
11b.	Highlands County - Evacuation Zones/Shelters/ Check Points, Southern Portion	POCKET B
12a.	Polk County - Evacuation Zones/Shelters/Check Points, Western Portion.	POCKET C
12b.	Polk County - Evacuation Zones/Shelters/Check Points, Eastern Portion.	POCKET C
12c.	City of Lakeland Shelters.	POCKET C
12d.	City of Winter Haven Shelters.	POCKET C

LIST OF APPENDICES

Appendix		Page
A.	Tracks of Hurricanes Passing Within 100 Nautical Miles of Tampa Bay 1886 - 1979	A-1
B.	Saffir/Simpson Hurricane Scale	B-1
C.	Report on Expected Coastal Demand for Inland Shelter Facilities	C-1
D.	Tracks of Hurricane Donna Across Florida, September, 1960	D-1
E.	Behavioral Survey Analysis and Report	E-1
F.	Examples of Letters to Owners of Alternate Shelters	F-1
G.	Central Florida Inland Shelter Advisory Committee Membership, October, 1982	G-1

Regional Planning Councils of Florida



REGIONAL PLANNING COUNCILS	PLANNING DISTRICTS	MEMBER COUNTIES	
West Florida RPC	1	Escambia Okaloosa Bay	Santa Rosa Walton
Apalachee RPC	2	Calhoun Franklin Gadsden Jackson Holmes	Leon Liberty Wakulla Gulf Washington
North Central Florida RPC	3	Alachua Bradford Columbia Hamilton Union	Lafayette Madison Suwannee Taylor
Northeast Florida RPC	4	Baker Clay Duval Flagler	Nassau Putnam St. Johns
Withlacoochee RPC	5	Citrus Hernando Levy	Marion Sumter
East Central Florida RPC	6	Brevard Lake Orange	Osceola Seminole
Central Florida RPC	7	DeSoto Hardee Highlands	Okeechobee Polk
Tampa Bay RPC	8	Hillsborough Manatee	Pasco Pinellas
Southwest Florida RPC	9	Charlotte Collier Glades	Hendry Lee Sarasota
Treasure Coast RPC	10	Indian River Martin	Palm Beach St. Lucie
South Florida RPC	11	Broward Dade	Monroe

Effective January, 1981

Distributed by:
Substate Program Development Office
Department of Veteran and Community Affairs
(904) 488-0410

I. INTRODUCTION

The State of Florida has always been vulnerable to the destructive forces of hurricanes.[1] The Gulf coast of the State has been particularly susceptible to damage from hurricanes due to the relatively shallow waters of the Gulf of Mexico, and the very low elevations of the Gulf coastline. These elevations are as low as 20 feet above Mean Sea Level (MSL) 20-25 miles inland from the coast (as in Collier County). With the tremendous growth of Florida's population over the last thirty years, the potential for loss of life and property has also increased dramatically.

While the population most vulnerable to major hurricanes in the Gulf is obviously that along the coast, a substantial portion of the population of inland counties is also vulnerable. As the population of the State increases, the need for realistic hurricane evacuation and sheltering plans becomes more acute; not only for coastal areas, but for inland areas as well.

Two coastal hurricane evacuation plans have been completed as of this writing. One covers the six-county Southwest Florida planning region of Hendry, Glades, Collier, Lee, Charlotte, and Sarasota Counties.[2] The other covers the four-county Tampa Bay planning region of Hillsborough, Manatee, Pasco and Pinellas Counties.[3] These detailed plans illustrate the large areas of the Gulf coast which are vulnerable to the wind, flooding, and storm surges of a major hurricane. They identify the number and location of people in each county of the respective planning regions which would need to evacuate prior to eye landfall of hurricanes of differing characteristics. They identify the number of evacuees which would seek shelter outside the regions. They identify the routes which would be used by evacuees to reach areas of safety. They summarize behavioral surveys which indicate the tendencies of people in a hurricane situation. Most importantly, however, these plans have, for the first time, quantified the time required to safely evacuate vulnerable coastal areas prior to eye landfall of hurricanes of different paths and intensities. This "evacuation time" is the sum of the time it takes to move the vulnerable population from their homes to their destinations and the time prior to eye landfall when roads become inundated or when sustained gale-force winds begin. It is , in several cases, much greater than the amount of time (12 hours) during which the National Weather Service can accurately predict the eye landfall of a hurricane. Lengthly evacuation times (up to 17½ hours, depending on the strength and path of the storm), mean that evacuation orders must be issued earlier in relation to eye landfall, as the Tampa Bay study points out.[4]

As the coastal population grows, so must the coastal evacuation times. Therefore, the Tampa Bay study asserts, there will be instances when evacuations will be ordered for areas which ultimately will be spared by

---

[1] Appendix A, Tracks of Hurricanes passing within 100 nautical miles of Tampa Bay

[2] Southwest Florida Regional Hurricane Evacuation Plan, Southwest Florida Regional Planning Council, November, 1981.

[3] Tampa Bay Region, Florida, Hurricane Evacuation Plan Technical Data Report, Tampa Bay Regional Planning Council, June, 1981.

[4] Ibid, p. 2

a hurricane which has changed course. "The 'crying wolf' situation is one that must now be accepted as a necessary precaution for areas of intensive coastal residential development," because more accurate hurricane forecasting by the National Weather Service is unlikely in the forseeable future.[5]

The implications of long evacuation times and the "cry wolf" situation extend beyond the coastal counties. Hurricane Donna was the last major hurricane to directly affect the Central Florida Region.[6] Because of the growth and development of Central Florida during the last 20 years, many communities and local officials may not be aware of the potential impact a landfalling or parallelling storm in the Gulf will have on their emergency response capabilities. This report will give local officials specific information with which they can update their local plans as they relate to multi-county hurricane evacuation scenarios.

II. OBJECTIVE AND SCOPE

The objective of this plan is to provide local elected officials, disaster preparedness and law enforcement agencies with information which will be used to prevent or reduce the loss of life and property during a major hurricane. This information, presented in quantified terms, will reduce the speculation and guesswork which has predominated in hurricane evacuation and sheltering plans. No plan can predict the future with 100% certainty, however, especially when natural disasters and human nature must be considered. In fact, this plan is based on several assumptions made necessary because of a fortunate lack of major hurricane activity in this area in the recent past. (These assumptions will be noted at appropriate points in the text.) This plan, however, is based upon the best available data as well as accurate first-hand research.

This plan is regional, or multi-county in scope. This is a relatively innovative approach to hurricane planning, as opposed to much of the planning of the past which has focused on local or county-wide responses to a hurricane emergency. Obviously, major hurricanes do not damage one or two square city blocks, one or two square acres, or even one or two square miles. They can cause serious destruction in several counties or several states, as history has demonstrated many times. The State of Florida, recognizing its vulnerability and the multi-county impacts of major hurricanes, contracted with three regional planning councils (Central Florida, East Central Florida, and Withlacoochee) to draft interrelated inland shelter plans which address impacts such as the inter-regional evacuation of thousands of people. One purpose of this plan, then, is to show local officials the "big picture" of several hurricane scenarios and outline to them the implications for their jurisdictions of a major landfalling or parallelling

---

[5]Ibid, p.2

[6]Donna was classified as a Category 3 hurricane on the Saffir/Simpson Scale as it passed over Central Florida.

hurricane. This plan will not provide detailed local information such as the intersections at which police officers should be deployed. It will, however, provide specific information from which local officials may develop detailed plans.

A. Study Area

The Central Florida Region consists of five land-locked counties (DeSoto, Hardee, Highlands, Okeechobee, and Polk) covering an area of over 4,900 square miles. With the exception of the Lakeland-Winter Haven (Polk County) urban area, the region is rural with approximately 67% of the land in agricultural holdings. The 1980 population of each county and the percent increase in population from 1970-1980 are as follows:

DeSoto:	19,039/45.8
Hardee:	19,379/30.2
Highlands:	47,526/61.1
Okeechobee:	20,264/80.4
Polk:	321,652/40.8

The topographic features of the Central Florida Region exhibit much the same pattern as the entire State of Florida. The four basic land formations in the region are highlands, ridges, intermediate plains, and lowlands. The highlands areas are primarily located in the northern section of the region: in Polk County, northern Highlands, and Hardee Counties. Ridge areas are scattered throughout Polk County through the western section of Highlands County. Intermediate plains cover the southern areas of the region. Lowlands areas are found in the northwest tip of Polk, the southwest portion of DeSoto and the northeast section of Okeechobee County.

Major floodplains exist along the Peace River (extending from Lake Hancock north of Bartow in Polk County to Charlotte Harbor near southeast DeSoto County) and its tributaries of Saddle Creek, Peace Creek Canal, Bowlegs Creek and Payne Creek. Other major floodplains exist along the Kissimmee River, in the Green Swamp of northern Polk County, in a large portion of Okeechobee County, and in the more densely populated areas around lakes in the region.

B. Work Tasks

The major tasks accomplished during the ten (10) month study period are as follows:

1. Identification of potential number of inland residents that may require shelter in the event a Category 3, 4, or 5 storm strikes or parallels the lower or central Gulf coast of Florida.

2. Inventory of designated inland county public shelters, and analysis of shelter capacity.

3. Determination of the feasibility of using current public shelters in relation to their location, elevation, potential wind hazards, and potential flood hazards.

4. A statistically significant investigation of behavioral tendencies of potential inland county evacuees.

5. Determination of additional shelter space needed to house coastal evacuees from the Southwest Florida and Tampa Bay planning regions.

6. Determination of intra and inter-regional evacuation routes and shelter assignments.

7. Identification of shelter checkpoint sites.

8. Development of an institutional framework for a coordinated inter-regional evacuation.

9. Establishment of a regional disaster preparedness committee.

Again, in keeping with the contractural requirements of this study, and to retain a measure of continuity with existing and ongoing regional hurricane evacuation and sheltering plans, this report is not intended to serve as the detailed operations plan for each unit of local government in the region. The implementation of any evacuation plan is a local function. Therefore, the actual deployment and assignment of manpower and equipment to carry out the evacuation is best planned for at the local level. However, this report sets forth the types and magnitude of activities that must be carried out to prevent large scale loss of life. The data provided by this report will enable the local governments of the region to draft specific operating procedures for the relocation of their vulnerable populations. This study does not address hurricane recovery or the direct protection of personal and real property.

III. HURRICANE EVACUATION ORGANIZATION AND AUTHORITY

The warning and response functions associated with hurricane evacuation are carried out by several entities at the Federal, State, and local levels.

A. National Weather Service

There are two major elements of the National Weather Service directly involved in the hurricane evacuation process. These are the National Hurricane Center and the Local Weather Service Offices.

1. National Hurricane Center

The need for hurricane evacuation is determined from a warning system that originates from the detection and monitoring of tropical cyclone activity by the National Hurricane Center (NHC) of the National Weather Service. The NHC, located in Miami, Florida identifies such activity as a tropical depression and monitors its development into

a tropical storm. At this point, the disturbance is named. As the tropical storm intensifies and the maximum sustained surface winds exceed 74 miles per hour, the disturbance becomes a hurricane. Throughout the monitoring of tropical cyclones, the NHC forwards information on the characteristics of the disturbance to a network of local National Weather Service offices throughout the country. This information is normally channeled in the form of advisory bulletins to the local offices at six-hour intervals. These advisory bulletins include the location and characteristics of the storm as well as forecasts as to what can be expected over the next 12 to 24 hours. As the hurricane comes closer to striking land (hurricane landfall), the six-hour interval advisories may be supplemented by intermediate advisories every three hours or even less if needed. The advisory bulletins and other information to local preparedness agencies also include any evacuation recommendations by the NHC. In addition, local and state disaster preparedness agencies are provided restricted information on the hazard potential of the hurricane as the storm moves within 72 hours of projected landfall. This information is channeled over the National Warning System (NAWAS) and normally categorizes the hurricane on a general descriptive scale of hazard potential. This scale, the Saffir/Simpson Hurricane Scale, defines the "category" of the hurricane based on several measurable characteristics or parameters of the storm. The scale appears as Appendix B.

2. Local Weather Service Offices

As the NHC forwards information on the hurricane to local National Weather Service offices, each office records and interprets the information relative to how it could be expected to affect its area of responsibility. DeSoto, Hardee, Highlands and Polk Counties fall under the responsibility of the Tampa Area Office of the National Weather Service located in Ruskin, Florida. Okeechobee County falls under the Palm Beach office of the National Weather Service. As the hurricane approaches a particular coastal area (e.g., the Tampa Bay Region), the local weather service office adds local statements to the advisory bulletins from the NHC. These local statements are forwarded via NAWAS to those county disaster preparedness agency communications centers included in the area addressed by the advisory bulletin. Local statements include recommended precautionary and response actions to be carried out and estimated times by when they should be completed. They include existing local conditions of winds and tides as monitored by local wind and tide gage systems. Local statements from the Tampa area office also include a description of any areas recommended to be evacuated from the approaching hurricane. Currently, such general descriptions entail the listing of estimated distances in blocks or miles from water bodies of land areas that should be evacuated. These areas are defined entirely by land elevations. Currently, Tampa office local statements would include one of two general lists of areas to be evacuated: (1) areas vulnerable to a 10 foot storm surge, or (2) areas vulnerable to a 20 foot storm surge.

B. State of Florida

The two major entities at the state level directly involved in the hurricane evacuation process are the Governor and the Florida Bureau of Disaster Preparedness.

1. The Governor

Authority to order evacuation from approaching hurricane is conferred to the Governor by Chapter 252.36 (5) (e); stating that the Governor may:

> "Direct and compel the evacuation of all or part of the population from any stricken or threatened area within the state if he deems this action necessary for the preservation of life or other disaster mitigation, response, or recovery."

2. Bureau of Disaster Preparedness

The Bureau of Disaster Preparedness under the Division of Public Safety Planning and Assistance, Department of Community Affairs is responsible for directing and coordinating disaster mitigation, preparedness, response, and recovery activities of the State. Included in the many duties under these activities is the power to make official recommendations for prevention and preparedness measures designed to eliminate or reduce disasters or their impact. Consequently, the Bureau performs the primary staff function to the Governor during disaster emergencies and recommends to the Governor the nature, extent, and timing of the issuance of the evacuation order.

The Bureau is linked to the NHC and local weather service offices by communications channels including NAWAS. In addition, emergency communications with local governments are maintained over NAWAS and through a network of four area coordination offices throughout the State.

C. Local Government

At the local level; elected officials, local disaster preparedness agencies, and other departments of local government all become involved in the evacuation process.

1. Elected Officials

The same power to order evacuation from an approaching hurricane conferred upon the Governor under Chapter 252.36 (5) (e), Florida Statutes, is also delegated to the governing body of each political subdivision of the State by 252.32 and Executive Order 80-29. The term "political subdivision" is defined under the Statute as "any county or municipality created pursuant to law." Therefore, the chief elected official of both counties (chairman of the board of commissioners) and municipalities (mayor) is delegated the power to order the evacuation from an approaching hurricane.

2. County Disaster Preparedness Agencies

Just as the Bureau of Disaster Preparedness recommends emergency measures to be ordered by the Governor, county disaster preparedness agencies serve the same staff function to the governing body of the political subdivision. Hurricane evacuation orders are normally issued by the chief elected official based on the recommendation of the director of the county disaster preparedness department, or previously established disaster advisory council/committee. Such recommendations should be based on previously formulated evacuation plans.

3. Municipal Disaster Preparedness Agencies

Although not mandated by Chapter 252, Florida Statutes, as counties are, municipalities are authorized by the same Statute to create and establish a local disaster agency for disaster operations and planning. Just as with counties, the decision of the governing body to order an evacuation normally results from a recommendation from the municipal disaster preparedness director or disaster advisory council.

4. Local Government Departments

The actual execution of an evacuation requires local resources normally based in several key county or city departments. These key departments include law enforcement, fire, public works, utilities, health services, and traffic engineering. Disaster preparedness or response activities of the manpower and equipment of such departments are coordinated by the local disaster preparedness department upon declaration of emergency conditions. Although normally directing a departmental function in day-to-day governmental operations, the disaster preparedness director automatically assumes the direct line function of primary advisor to the governing body for disaster activities.

D. American Red Cross

The local chapters of the American Red Cross are responsible for the overall management of public natural disaster shelters as designated by local government. This includes the provision of trained staff, food supplies, and registration procedures throughout the duration of the shelter stay. Such responsibility has been delegated by Congressional charter under Public Law 58-4.

E. Coordination of Government Action In Emergency Evacuation Decisions

The descriptions of organizational authorities in the preceding sections of this chapter show that the decision-making and evacuation ordering power has been conferred or delegated to three different levels of government; state, county and municipal. Further, the advisory authority of the National Weather Service at the Federal level is an essential component of the warning and evacuation procedure. Such emergency powers at the various levels of government are innate

responsibilities of the particular jurisdictions to safeguard the lives of their citizens. However, this diffusion of the authority to issue an evacuation order demands firm interjurisdictional coordination. An uncoordinated evacuation order could have a devastating impact on the safety of not only the citizens of the jurisdiction issuing the order, but also the surrounding jurisdictions of an urban region.

Chapter 252, Florida Statutes, the Governor's Executive Order 80-29, and the Florida Natural Disaster Plan empower any local political subdivision (county or municipality) to order an evacuation of its endangered population without prior order by other levels of government. Therefore, in the event that the state fails to order evacuation as early as required by specific local conditions, a county may order evacuation within its physical boundaries. However, evacuation orders of higher levels of government are binding upon lower levels of government. For example, a State order is binding upon counties and a county order is binding upon a municipality.

There is an obvious need for coordination of emergency action with other levels of government and private agencies to ensure the availability of adequate resources to support evacuation. As long as the evacuation decision-making forum includes all relevant jurisdictional entities communicating while analyzing the approaching hurricane hazard from a common data base, negative impacts of an evacuation should be minimized.[6]

1. Framework for Inter-regional Coordination

Because of the great strain that will be placed on manpower and resources in the Central Florida Region by an evacuation of coastal areas, it is imperative that Civil Defense and law enforcement agencies in Central Florida be informed about a coastal evacuation. The framework for this notification process centers on the Bureau of Disaster Preparedness Area Coordinators. (The Central Florida Region falls under two Bureau of Disaster Preparedness Areas, the South Florida Area, which covers DeSoto, Highlands and Okeechobee Counties; and the Central Florida Area which covers Hardee and Polk Counties.) The timely relay of a message regarding coastal evacuation to Central Florida counties is essential for these inland counties to initiate plans for the reception or pass-through of evacuees. Inland Civil Defense directors, upon being notified by the Area Coordinators, will inform their county commission chairmen, their county law enforcement agencies, the Red Cross, and other applicable departments and agencies about the impending coastal evacuation. During evening hours, or other periods when Civil Defense directors are off duty, the county sheriff would be notified first. The sheriff would then notify the Civil Defense director who will notify the commission chairmen, etc. Concurrent to the notification process, all intra-county emergency activities will take place per each county's emergency operations plan.

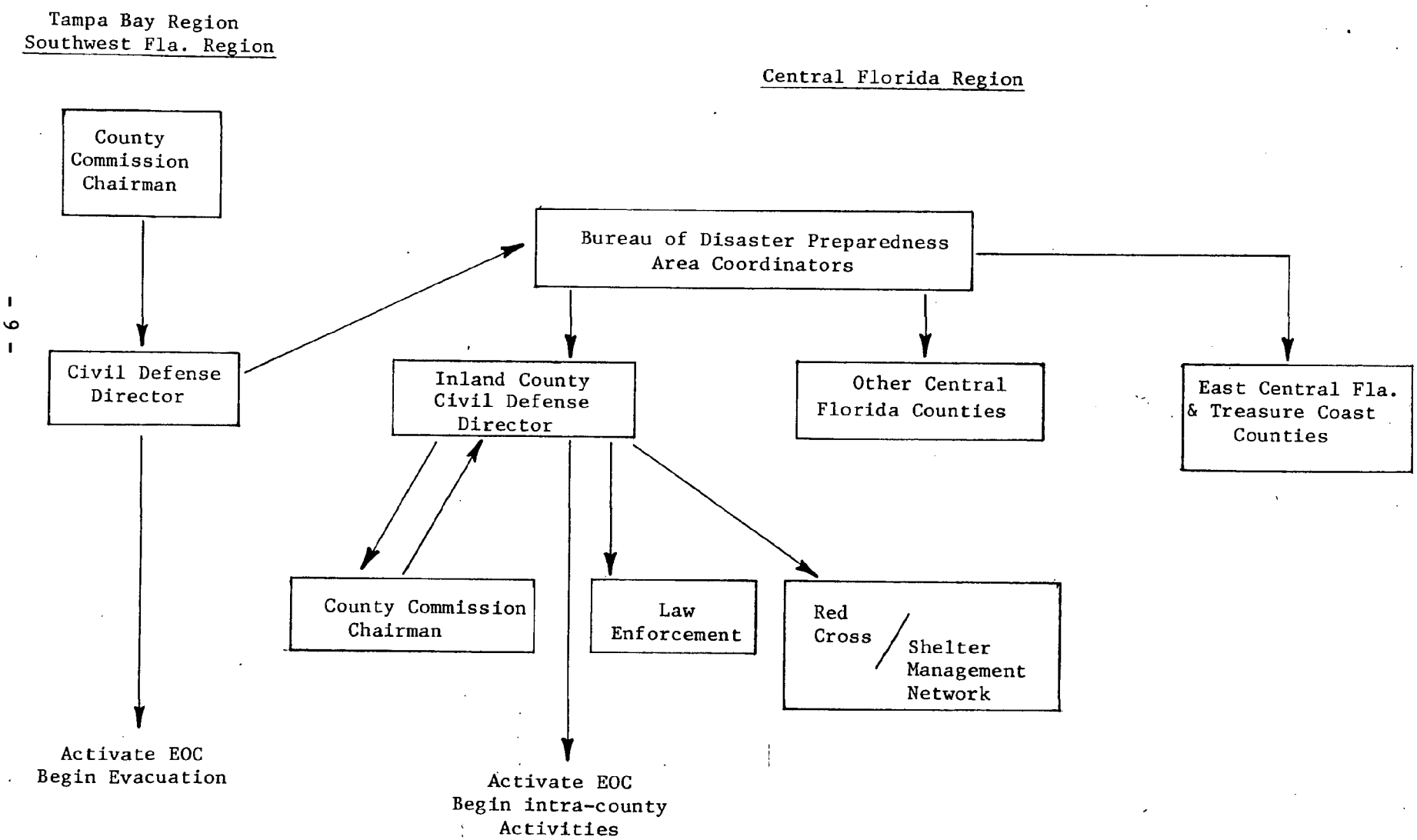
Figure 1 illustrates the proposed institutional framework.

---

[6]The preceding outline on Evacuation Organization and Authority is reprinted from the Tampa Bay Regional Hurricane Evacuation Plan, pp. 7-11.

FIGURE 1

FRAMEWORK FOR INTER-REGIONAL EVACUATION



IV. METHODOLOGY, BACKGROUND, AND RESEARCH

The formulation of a comprehensive and quantitative hurricane evacuation plan requires extensive data collection and analysis. Because a hurricane is created by nature and responded to by man, the unpredictability of both forces must be addressed through various assumptions when planning for an evacuation. This planning effort includes several such assumptions. However, attempts were made to quantify as many of the factors contributing to hurricane-vulnerability as possible with available resources. The methods by which the factors were quantified and brought together as the findings of the study, are described below. Included are the identification of the sources of existing data, and data analysis procedures.

A. Coastal Evacuation and Demand for Shelter

Prior to the eye landfall of a major hurricane (or the close approximation to the coast of a major parallelling hurricane), the Central Florida Region will receive thousands of coastal residents who have been ordered to evacuate the most vulnerable coastal areas. To accurately estimate this probable demand, estimates of the potential number, location and probable destinations of evacuees in the Southwest Florida and Tampa Bay regions were taken from the evacuation plans completed in those respective regions. These data were then augmented by information provided by the Bureau of Disaster Preparedness, which outlined the number of vehicles and vehicle occupancy rates per evacuation route entering the Central Florida Region for each of 12 hurricane scenarios.[7] (Appendix C)

The 12 scenarios developed by the Bureau represent possible hurricanes of varying paths and intensities in the Gulf of Mexico. "Regional Scenarios" 1 through 4 represent worst-case (Saffir/Simpson Category 5) hurricanes making landfall in Pasco, Pinellas, Hillsborough, and Manatee Counties respectively (the Tampa Bay Region). Regional Scenarios 5, 6, and 7 represent worst-case landfalling hurricanes in Sarasota, Charlotte and Lee/Collier Counties. Scenarios 8 through 11 represent less-than-worst-case landfalling hurricanes in Southwest Florida, and Scenario 12 represents a worst-case parallel storm.

Each of the 12 regional scenarios generates differing numbers of evacuees in each of the coastal counties. Thus, aside from differing regional weather conditions in each scenario, the demand on the regional road network in Central Florida and the demand on shelters in the Central Florida Region will be different in each scenario. In other words, just as Regional Scenario 3 (a worst-case hurricane striking Hillsborough County) will create the most severe conditions in Hillsborough County

---

[7] Report on the Expected Coastal Demand for Inland County Shelter Facilities from the Tampa Bay and Southwest Florida Planning Regions, Department of Community Affairs, Bureau of Disaster Preparedness, 1982.

and less severe conditions in adjacent coastal counties, Scenario 3 will, in the Central Florida Region, create the most severe demand on roads and shelters in Polk County and less severe conditions on roads and shelters in the region's other four counties. On the other hand, a worst-case hurricane striking any Southwest Florida County (Scenarios 5 through 7) will affect the Tampa Bay area very little, while severely taxing the entire Central Florida road and shelter network. This latter condition is due to the fact that the more rural counties of DeSoto and Hardee (which would receive coastal evacuees from Southwest Florida first) would be unable to shelter the majority of those evacuees and would have to pass them through to other counties in the region.

For the purposes of efficiently completing this plan, and as a matter of coordination with the East Central Florida Regional Planning Council which is conducting a similar study, the CFRPC staff has selected three possible worst case hurricane scenarios for detailed analysis. The three scenarios selected are: 1) A worst-case storm making landfall in Hillsborough County; 2) A worst-case storm making landfall in Sarasota County; and 3) The worst-case parallel storm.(See Figure 2) These scenarios were chosen because, in terms of vehicles and evacuees generated, they represent the worst case landfalling storms in the Tampa Bay and Southwest planning regions, and the worst of possible parallel storms. From summaries of the number of potential coastal evacuees in each regional scenario (Table 1), and the summary of routes to be used by evacuees entering the Central Florida Region (Table 2), one can see that, depending upon the storm track, the number of vehicles and evacuees, as well as the evacuation routes used, will vary significantly. It is important to note the effect of a major hurricane striking the lower Gulf coast, causing a large number of coastal evacuees to directly enter DeSoto and Hardee Counties and to indirectly enter Polk and Highlands Counties. It is also important to note the effects of a landfalling storm in the Tampa Bay region as well as a parallel storm. A landfalling hurricane in the Tampa area will cause a large number of evacuees to enter Polk County. A worst-case parallel storm will generate evacuees from Tampa Bay to the lower Gulf Coast. It is assumed, however, that a parallel storm will not generate evacuees from this region, as the wind and rain fields will not extend far enough inland to cause significant damage. The three selected scenarios as they affect Central Florida in terms of inter-regional evacuation routes, and the number of vehicles and persons evacuating, are illustrated in Figures 3,4, and 5.

With regard to the numbers of vehicles, evacuees, and evacuation routes entering this region, the following summarizes the assumptions made in the Bureau report on shelter demand:

1. Behavioral Assumptions

   (a) Of the population evacuating out of the Tampa Bay Region, the following may be seeking shelter in interior counties: Pasco County, 49.5%, Pinellas County, 33.8% Hillsborough County, 38.6%; Manatee County, 34.0% (Source: Tampa Bay Hurricane Evacuation Plan Technical Data Report).

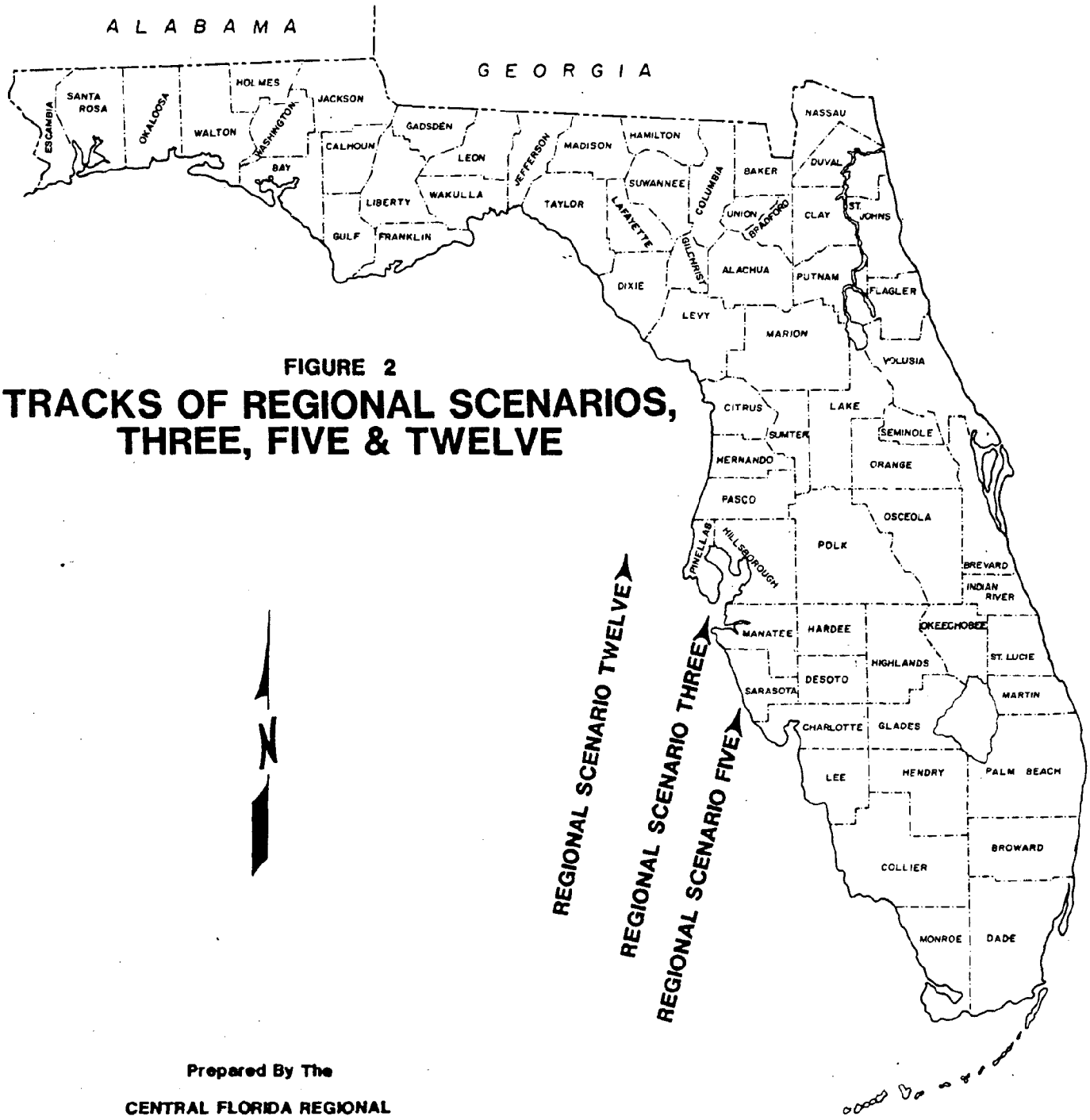


FIGURE 2

TRACKS OF REGIONAL SCENARIOS, THREE, FIVE & TWELVE

Prepared By The

CENTRAL FLORIDA REGIONAL

PLANNING COUNCIL

October 1982

(b) 34% of the Southwest Florida Planning Region's population effected by hurricanes will evacuate out of the region (Source: Southwest Florida Regional Hurricane Evacuation Plan).

(c) 45% of the Southwest Florida Planning Region's population effected by hurricanes will seek shelter (Source: Southwest Florida Regional Hurricane Evacuation Plan).

(d) That portion of the population seeking shelter who cannot find it due to an inadequate supply within their county will evacuate out of both Tampa Bay and Southwest Florida Planning Regions.

2. Conversion of Population to Number of Vehicles

(a) Vehicle occupancy rates for the Tampa Bay Region were derived from 1970 Census Data updated to 1979 data (Source: Tables G-11 through G-15, Tampa Bay Regional Hurricane Evacuation Plan Technical Data Report).

(b) Vehicle occupancy rates for the Southwest Florida Region were derived by dividing the number of people evacuating out of each county by the number of vehicles to be used in such an evacuation (Source: Southwest Florida Regional Hurricane Evacuation Plan).

3. Regional Traffic/Population Assignments

(a) Traffic assignments on routes out of the Tampa Bay Region were derived from Appendix G, Tampa Bay Regional Hurricane Evacuation Plan Technical Data Report.

(b) Traffic Assignments on routes out of the Southwest Florida Region were based on the routes' abilities to handle traffic based on their roadway capacities. In this manner, maximum use of the regional transportation networks is achieved while providing the shortest evacuation time possible.

- That portion of a county's population evacuating on I-75 would remain on that route until they leave the region.

- Evacuees using U.S. 41 would gravitate towards I-75 as they leave their respective counties.

- Evacuees from Collier, Lee, Charlotte, and Sarasota remaining on I-75 will be routed northeast on I-4.

- Traffic entering Manatee County on U.S. 41 and U.S. 301 from the Southwest Florida Planning Region will be routed east on S.R. 70.

- Traffic entering Sarasota County on U.S. 41 from Collier, Lee and Charlotte Counties will be routed east on S.R. 72.

- S.R. 765 in Lee County will not be used as an evacuation route by those evacuees from Collier County.

- S.R. 775 in Charlotte County will not be used as an evacuation route by those evacuees from Lee and Collier Counties.

- S.R. 31 in Charlotte County will be used primarily by evacuees from Lee County.

The behavioral assumptions listed above were based on a telephone survey of residents of the Tampa Bay Region, and a newspaper survey of residents of the Southwest Florida Region. The main question asked in these surveys was, to paraphrase, "If you were to evacuate, what would be your destination?" By combining the percentage of those who said they would go to a public shelter and the population expected to evacuate out of the coastal region(s), the demand for public shelter in Central Florida was derived.

B. Hurricane Hazards and Vulnerable Populations

Because of its relatively close proximity to the Gulf coast, and because of its topography, the Central Florida Region will be the area where most coastal residents who evacuate out of their region(s) will seek shelter. Moreover, depending upon a hurricane's characteristics and path, there will be evacuees from Central Florida who will be seeking public shelter as well.

To determine the number of inland residents which will need to evacuate in the event of a hurricane, an analysis of the hurricane-related hazards which may threaten the lives and property of Central Florida residents was appropriate.

The most destructive force of a hurricane is the "storm surge". This mound of seawater pushed ahead of a hurricane (reaching as much as 18 feet above the level of the tide) is the biggest killer of coastal residents. It is the threat of the storm surge and accompanying saltwater flooding, along with the threat of high winds, which will trigger coastal evacuations. The storm surge is obviously not a threat to Central Florida residents.

Two other hazards related to hurricanes will threaten residents of the Central Florida Region, however. These are freshwater flooding caused by heavy rain, and hurricane-force winds.

TABLE 1.1

REGIONAL EVACUATION SCENARIO 1
WORST CASE: Pasco
VEHICLES/PERSONS

RECEIVING COUNTY

EVACUATION COUNTY	DESOTO	HARDEE	HIGHLANDS	OKEECHOBEE	POLK	TOTAL
Pasco	--	--	--	--	--	--
Pinellas	--	--	--	--	20477/44973	20477/44973
Hillsborough	--	--	--	--	14341/30005	14341/30005
Manatee	1001/2716	7613/20399	--	--	--	6814/23115
Sarasota	--	--	--	--	--	
TOTAL	1001/2716	7613/20399	--	--	34818/74978	43432/98093

TABLE 1.2

REGIONAL EVACUATION SCENARIO 2
WORST CASE: Pinellas
VEHICLES/PERSONS

RECEIVING COUNTY

EVACUATION COUNTY	DESOTO	HARDEE	HIGHLANDS	OKEECHOBEE	POLK	TOTAL
Pasco	--	--	--	--	--	--
Pinellas	--	--	--	--	31104/70690	31104/70690
Hillsborough	--	--	--	--	22461/52540	22461/52540
Manatee	1001/2716	9410/25754	--	--	--	10411/28470
Sarasota	--	--	--	--	--	--
TOTAL	1001/2716	9410/25754	--	--	53565/123230	63976/151700

TABLE 1.3

REGIONAL EVACUATION SCENARIO 3
WORST CASE: Hillsborough
VEHICLES/PERSONS

RECEIVING COUNTY

EVACUATION COUNTY	DESOTO	HARDEE	HIGHLANDS	OKEECHOBEE	POLK	TOTAL
Pasco	--	--	--	--	--	--
Pinellas	--	--	--	--	31090/70690	31090/70690
Hillsborough	--	--	--	--	25857/58187	25857/58187
Manatee	1001/2716	7468/20110	--	--	--	8469/22826
Sarasota	11496/25291	8208/18058	--	--	--	19704/43349
TOTAL	12497/28007	15676/38168	--	--	56947/12887	85120/195052

TABLE 1.4

REGIONAL EVACUATION SCENARIO 4
WORST CASE: Manatee
VEHICLES/PERSONS

RECEIVING COUNTY

EVACUATION COUNTY	DESOTO	HARDEE	HIGHLANDS	OKEECHOBEE	POLK	TOTAL
Pasco	--	--	--	--	--	--
Pinellas	--	--	--	--	18210/36329	18210/36329
Hillsborough	--	--	--	--	15897/33214	15897/33214
Manatee	2145/5896	10447/28360	--	--	--	12592/34256
Sarasota	27050/54100	16089/32178	--	--	--	43139/86278
TOTAL	29195/59996	26536/60538	--	--	34107/69543	89838/190077

TABLE 1.5

REGIONAL EVACUATION SCENARIO 5
WORST CASE: Sarasota
VEHICLES/PERSONS

RECEIVING COUNTY

EVACUATION COUNTY	DESOTO	HARDEE	HIGHLANDS	OKEECHOBEE	POLK	TOTAL
Pasco	--	--	--	--	--	--
Pinellas	--	--	--	--	--	--
Hillsborough	--	--	--	--	--	--
Manatee	2145/5896	10477/28360	--	--	--	12622/24256
Sarasota	27050/54100	16089/32178	--	--	--	43139/86278
Charlotte	13029/23451	8417/15151	2363/4238	--	--	23089/42840
Lee	23596/51912	31954/70293	9203/20247	--	--	64753/142452
Collier	2129/4470	8101/17012	1714/3599	--	--	11944/25081
Glades	--	--	259/259	301/301	--	560/560
Hendry	--	--	--	--	--	--
TOTAL	67949/139829	75038/162994	13539/28343	301/301	--	156927/331467

TABLE 1.6

REGIONAL EVACUATION SCENARIO 6
WORST CASE: Charlotte
VEHICLES/PERSONS

RECEIVING COUNTY

EVACUATION COUNTY	DESOTO	HARDEE	HIGHLANDS	OKEECHOBEE	POLK	TOTAL
Pasco	--	--	--	--	--	--
Pinellas	--	--	--	--	--	--
Hillsborough	--	--	--	--	--	--
Manatee	--	--	--	--	--	--
Sarasota	13800/30360	8208/18060	--	--	--	22008/48420
Charlotte	13029/23451	8417/15151	--	--	--	21446/38602
Lee	23596/51912	31954/70293	9203/20247	--	--	64753/142452
Collier	3490/7330	13277/27882	2809/5899	--	--	19576/41111
Glades	--	--	259/259	301/301	--	560/560
Hendry	--	--	--	--	--	--
TOTAL	53915/113053	61856/131386	12271/26405	301/301	--	128343/271145

TABLE 1.7

REGIONAL EVACUATION SCENARIO 7
WORST CASE: Lee/Collier
VEHICLES/PERSONS

RECEIVING COUNTY

EVACUATION COUNTY	DESOTO	HARDEE	HIGHLANDS	OKEECHOBEE	POLK	TOTAL
Pasco	--	--	--	--	--	--
Pinellas	--	--	--	--	--	--
Hillsborough	--	--	--	--	--	--
Manatee	--	--	--	--	--	--
Sarasota	--	--	--	--	--	--
Charlotte	13029/32451	8417/15151	--	--	--	21446/38602
Lee	23698/52202	32134/70695	9256/20363	--	--	65088/143260
Collier	3844/7686	14639/29278	3098/6196	--	--	21581/43160
Glades	--	--	259/259	301/301	--	560/560
Hendry	--	--	--	--	--	--
TOTAL	40571/83339	55190/115124	12613/26818	301/301	--	108675/225582

TABLE 1.8

REGIONAL EVACUATION SCENARIO 8

VEHICLES/PERSONS

RECEIVING COUNTY

EVACUATION COUNTY	DESOTO	HARDEE	HIGHLANDS	OKEECHOBEE	POLK	TOTAL
Pasco	--	--	--	--	--	--
Pinellas	--	--	--	--	--	--
Hillsborough	--	--	--	--	--	--
Manatee	--	--	--	--	--	--
Sarasota	10725/24668	6379/14672	--	--	--	17104/39340
Charlotte	4603/8746	2974/5651	--	--	--	7577/14397
Lee	10489/23076	14204/31249	4091/9000	--	--	28784/63325
Collier	1868/3924	7108/14927	1504/3158	--	--	10480/22009
Glades	--	--	259/259	301/301	--	560/560
Hendry	--	--	--	--	--	--
TOTAL	27685/60414	30665/66499	5854/12417	301/301	--	64505/139631

TABLE 1.9

REGIONAL EVACUATION SCENARIO 9

VEHICLES/PERSONS

RECEIVING COUNTY

EVACUATION COUNTY	DESOTO	HARDEE	HIGHLANDS	OKEECHOBEE	POLK	TOTAL
Pasco	--	--	--	--	--	--
Pinellas	--	--	--	--	--	--
Hillsborough	--	--	--	--	--	--
Manatee	--	--	--	--	--	--
Sarasota	20008/42016	11900/24990	--	--	--	31908/67006
Charlotte	4603/8746	2974/5651	--	--	--	7577/14397
Lee	10461/23015	14166/31165	--	--	--	24627/54180
Collier	--	--	--	--	--	--
Glades	--	--	259/259	301/301	--	560/560
Hendry	--	--	--	--	--	--
TOTAL	350072/73777	29040/61806	259/259	301/301	--	64672/136143

TABLE 1.10

REGIONAL EVACUATION SCENARIO 10

VEHICLES/PERSONS

RECEIVING COUNTY

EVACUATION COUNTY	DESOTO	HARDEE	HIGHLANDS	OKEECHOBEE	POLK	TOTAL
Pasco	--	--	--	--	--	--
Pinellas	--	--	--	--	--	--
Hillsborough	--	--	--	--	--	--
Manatee	--	--	--	--	--	--
Sarasota	--	--	--	--	--	--
Charlotte	2677/5086	1730/3287	--	--	--	4407/8373
Lee	22916/51912	31954/70293	9203/20247	--	--	64073/142452
Collier	3490/7330	13277/27882	2809/5899	--	--	19576/41111
Glades	--	--	259/259	301/301	--	560/560
Hendry	--	--	--	--	--	--
TOTAL	29083/64328	46961/101462	12271/26405	301/301	--	88616/192496

TABLE 1.11

REGIONAL EVACUATION SCENARIO 11

VEHICLES/PERSONS

RECEIVING COUNTY

EVACUATION COUNTY	DESOTO	HARDEE	HIGHLANDS	OKEECHOBEE	POLK	TOTAL
Pasco	--	--	--	--	--	--
Pinellas	--	--	--	--	--	--
Hillsborough	--	--	--	--	--	--
Manatee	--	--	--	--	--	--
Sarasota	--	--	--	--	--	--
Charlotte	--	--	--	--	--	--
Lee	5264/12107	7128/16394	--	--	--	12392/28501
Collier	3843/7686	14639/29278	--	--	--	18482/36964
Glades	--	--	259/259	--	--	259/259
Hendry	--	--	--	--	--	--
TOTAL	9107/19793	21767/45672	259/259	--	--	31133/65724

TABLE 1.12

REGIONAL EVACUATION SCENARIO 12
WORST CASE: Parallel
VEHICLES/PERSONS

RECEIVING COUNTY

EVACUATION COUNTY	DESOTO	HARDEE	HIGHLANDS	OKEECHOBEE	POLK	TOTAL
Pasco	--	--	--	--	--	--
Pinellas	--	--	--	--	16811/37762	16811/37762
Hillsborough	--	--	--	--	13814/28375	13814/28375
Manatee	1011/2716	6931/18259	--	--	--	7942/20975
Sarasota	13800/30360	--	--	--	--	13800/30360
Charlotte	9669/17403	6250/11250	--	--	--	15919/28653
Lee	23728/52202	32134/70695	9256/20363	--	--	65118/143260
Collier	3844/7686	14639/29278	3098/6196	--	--	21581/43160
Glades	--	--	259/259	301/301	--	560/560
Hendry	--	--	--	--	--	--
TOTAL	52052/110367	59954/129482	12613/26818	301/301	30625/66137	155545/333105

TABLE 2

SUMMARY OF HIGHWAYS
TO BE USED IN INTERREGIONAL EVACUATION

Central Florida Planning

Highway Number/Name	From	TO
I-4	Hillsborough County	Polk County
U.S. 92	Hillsborough County	Polk County
S.R. 60	Hillsborough County	Polk County
S.R. 574	Hillsborough County	Polk County
S.R. 640	Hillsborough County	Polk County
S.R. 674	Hillsborough County	Polk County
S.R. 676	Hillsborough County	Polk County
S.R. 62	Manatee County	Hardee County
S.R. 64	Manatee County	Hardee County
S.R. 70	Manatee County	DeSoto County
I-75	Sarasota County	Polk County Via I-4
U.S. 41	Sarasota County	DeSoto County Via S.R. 70
U.S. 301	Sarasota County	DeSoto County Via S.R. 70
S.R. 72	Sarasota County	DeSoto County
U.S. 17	Charlotte County	DeSoto County
Kings Highway	Charlotte County	DeSoto County
S.R. 31	Charlotte County	DeSoto County
U.S. 27 (N)	Glades County	Highlands County

Rainfall cannot be predicted for any given hurricane. There are no rainfall standards that may be applied to the regional hurricane scenarios developed by the Bureau, for example. As a rule of thumb, however, a hurricane can be expected to produce from 6 to 12 inches of rain. Hurricanes can be "wet" (producing much more than 12 inches in a short period of time), or "dry" (producing very little rain).

With regard to heavy rainfall, most of the Central Florida Region is relatively secure from large-scale freshwater flooding. Again, the populated areas most vulnerable to flooding are along the Peace River (particularly in DeSoto County), parts of Okeechobee County, and the more densely populated areas around lakes. Other less populated areas susceptible to flooding are in northern Polk County (the Green Swamp area) and along the Kissimmee River. While flooding in the Green Swamp or along the Kissimmee may not threaten many lives, flooding along the Peace River and around lakes may threaten hundreds of lives. Flooding in any or all of the above-mentioned areas may hinder evacuation or transportation through those area(s).

Even before the onset of flooding, rainfall will slow traffic movement on the regional road network because of poor drainage of road surfaces. This problem is especially acute on older, two-lane roads, which make up the bulk of the regional road system.

There were several problems related to analyzing flood hazards in Central Florida. First, up-to-date floodplain maps and information generally were not available. Second, ascertaining the exact threat posed by flooding was difficult. Questions remain as to how high flood waters will rise in 100 year or 500 year floods. In June, 1982, DeSoto County experienced a 10 year flood which caused the evacuation of low-lying areas near the Peace River, inundated cars and other vehicles near the River, and caused at least one regional road to be closed temporarily (S.R. 72).

According to the National Weather Service, the Central Florida Region can expect to experience a storm no stronger than a Category 3 hurricane on the Saffir/Simpson Scale (Appendix B). This is because hurricanes lose strength as they move overland, and a Category 4 or Category 5 hurricane would be expected to dissipate to a Category 3 by the time it reached this region.

Obviously, the wind speed of a hurricane is easily measured and categorized. Wind damage can thus be more easily predicted than flood or rain damage, as the descriptions of the categories of the Saffir/Simpson Scale in Appendix B illustrate. The only unpredictable wind hazards related to hurricanes are gusts, which can be considerably higher than the storm's sustained winds; and tornados which may be generated in or near a hurricane.

Aside from severe damage to signs, utility poles, and trees (and possible road blockage as a result), other wind damage will occur.

Buildings of differing structural integrity will withstand hurricane force winds differently. Large, well constructed buildings will sustain little damage in a Category 3 storm. Similarly, well constructed homes will sustain minimal wind damage. The housing type which is most likely to sustain serious life-threatening damage is the mobile home. By their nature, mobile homes are light weight and can be easily overturned by high winds as has been demonstrated many times in all parts of the country. Although some mobile home residents believe that they live in a relatively new unit with its required tie-downs, and that their unit will weather a hurricane, they should know that state regulations do not require the mobile home to withstand hurricane force winds. Similarly, tie-downs cannot be counted on to secure the mobile home in high winds. Moreover, windborne debris can severely damage the most securely tied down mobile home.

(Appendix D illustrates the path and intensity of Hurricane Donna, a Category 3 storm as it crossed Central Florida in September, 1960. Note the sustained wind speeds, wind gusts, rainfall amounts, and the extreme drop in barometric pressure recorded at Ft. Myers and Lakeland.)

The most vulnerable populations in the Central Florida Reigon, then, have been determined to be mobile home residents and people residing in flood prone areas (Table 3). While mobile home residents can be enumerated with reasonable accuracy, people living in flood plains can only be estimated due to the lack of up to date flood maps and the absence of any previous census of these residents. The following estimates are relatively accurate; however, they should be considered conservative. Residents-in-flood-plain estimates are for 100 year flood plains. Available maps for the Region do not indicate significantly larger areas for 500 year flood plains, so it is assumed that the population in a 500 year flood plain is not substantially larger than that in a 100 year flood plain.

Regarding differences in storm magnitude, both of these vulnerable populations in totality would be evacuated prior to the onset of gale-force-winds. Since the onset of gale-force winds generally approximates the onset of freshwater flooding in a hurricane, both mobile home and flood plain residents would become vulnerable at the same time.

There is some overlap between mobile home and flood plain residents; however, the exact number of mobile homes in flood plains is not known.

Estimates of the mobile home population assume a household size of 2.2 persons and a seasonal vacancy rate of 25%. The vacancy rate was applied across the board even though vacancies vary by type of resident. That is, a retiree is likely to be a permanent resident of a county whereas a "snowbird" is not likely to reside in the county during the hurricane season. In mobile home parks, the seasonal vacancy will vary with the tenure of its residents. Some parks experience a vacancy rate as high as 30%, and some less than 25%.

The estimates which follow in Table 3 were derived from several sources; the University of Florida Bureau of Economic and Business Research (Florida Statistical Abstract, 1981), the U.S. Bureau of the Census, available flood insurance and other flood plain maps, and various local department and agency representatives.

TABLE 3

POPULATIONS VULNERABLE TO HURRICANES
IN CENTRAL FLORIDA - 1980

County	Mobile Home Residents*	Flood Plain Residents*
DeSoto	4,118	8,000
Hardee	1,892	5,000
Highlands	11,400	5,500
Okeechobee	4,660	9,000
Polk	57,900	42,000
Region	79,970	69,500

*Estimates
Source: CFRPC, 1982

C. Central Florida Shelter Facilities

The second task of this study (following the formation of the Central Florida Inland Shelter Advisory Committee) was to inventory the designated public shelters in the five-county region. This time-consuming effort has yielded the most complete set of data on public shelters ever compiled in any of the counties. Using an inventory form similar to that developed by the East Central Florida Regional Planning Council, detailed information was gathered on each shelter's location, construction sources of power, wastewater and potable water facilities, and areas of safety, based on 20 and 40 square feet per person.

CFRPC staff originally tried to visit each shelter to conduct an inventory but later relied on individual school principals or school board representatives, clergymen, and other building owners to complete an inventory form as best they could and return it to the staff. The accuracy of the most important information on the inventory sheet (shelter adequacy and capacity) is thus limited by the judgement of the person who completed the inventory. While CFRPC staff has no evidence to show inaccuracies in the shelter data, Red Cross and/or Civil Defense officials may want to verify the information contained on the inventories, and as part of this process, involve a local building official to reassess each structure's ability to withstand hurricane forces. Several buildings designated as shelters in the Region were found to be unfit for one reason or another. More than one school was found to be inadequate because it was constructed in a finger wing configuration with fully one side of each wing on the campus being glass. Moreover, these schools had restrooms which were separate from the wings (i.e., one must go outside to

another wing to use the restroom). Several of the newer schools in the Region have been designed to be dependent on air conditioning systems. These schools generally have a small number of windows (if any), and are without auxiliary power. Thus, if the power is cut off during a storm, such schools will be without lights and ventilation. It will be recommended that these schools, if used, house a minimum number of evacuees. With the exception of about five designated shelters, auxiliary power is unavailable to shelters. Schools in unincorporated areas generally are served by package wastewater treatment facilities. These treatment facilities obviously would be inoperable if power was cut off.

Nearly all designated shelters (with the exceptions of obviously unfit buildings alluded to above) may be used to shelter evacuees in the event of a hurricane. All appear to have structurally sound shelter areas and relatively adequate parking facilities. Most shelters, however, appear to be unequipped or underequipped to provide extended meal service, communications, transportation, first aid, and again, auxiliary power.

The Central Florida Regional Planning Council has found that formally trained shelter managers in the Region are in short supply. As of October, 1982, Red Cross and Civil Defense officials in most Central Florida counties were recruiting volunteers to be trained as shelter managers. School principals are expected to participate in managerial duties at their respective schools, and CFRPC staff, in its contacts with principals in the region, have found most to have an intimate knowledge of their facilities. Staff was surprized, however, to find several principals who had a poor knowledge of their school's layout; especially areas which may be used to shelter evacuees. Several others, while being knowledgeable about their facilities, had never considered how the facilities would be used in a hurricane emergency or how they would participate in emergency activities. Because of the great strain which will be placed on disaster-response agencies during a major hurricane, "on the job training" of shelter managers or assistant managers should be avoided to the greatest possible extent. The school boards, Red Cross chapters and Civil Defense officials should, at the very least, instruct principals as to exactly what will be expected of them during an emergency.

Designated public shelters in each Central Florida county which were inventoried and determined to be adequate to withstand hurricane hazards are listed below in Table 4. Note the county totals at the end of each county list. Shelter locations for DeSoto, Hardee, and Okeechobee are mapped in Figures 8,9, and 10 respectfully. Shelter locations in Highlands County are mapped in Figures 11 (a) and 11 (b). Shelters in Polk County are mapped in Figures 12 (a), 12 (b), 12 (c) and 12 (d).

This list of shelters should not be considered permanent and inflexible. The list will be evaluated periodically by local officials and individual shelters may be added or deleted as necessary, thus changing the total shelter capacity of the individual counties and the Region.

D. Shelter Usage

While Table 3 illustrates the estimated number of Central Florida residents who will be most vulnerable to wind and flood hazards, not all of

TABLE 4

PRIMARY SHELTERS
CENTRAL FLORIDA REGION

DESOTO COUNTY PRIMARY SHELTERS	DESIGNATED AREAS OF SAFETY			POWER			WASTEWATER FACILITY		WATER		MAXIMUM PARKING CAPABILITIES		SANITARY FACILITIES		FOOD CAPABILITY	
	Identification	Planned Capacity 20 sq. feet	Planned Capacity 40 sq. feet	Electric	Gas	Auxiliary	Independent	Dependent	Independent	Dependent	Developed	Undeveloped	Restrooms	Showers	Yes	No
1. Brownville School	2 Classrooms @ 1944	194	97	X			X			X	0	140	X		X	
2. First Baptist Church	Fellowship Hall	N/A	N/A	X				X		X	N/A	500	X	X		X
3. DeSoto County Middle School	Library	300	150	X				X		X	50	560	X	X	X	
4. DeSoto High School	Gym	664	332													
	30 Classrooms @ 445 sq. ft.	667	333													
		1,331	665													
5. West Elementary	South Bldg. 11 Classrooms @ 600 sq. ft.	330	165	X				X		X	40	40	X		Limited	
6. Memorial Grammar School	Cafeteria	100	50													
	Conference Room	20	10													
	1st Floor Hallway	10	5													
		130	65	X	X			X		X	30	700	X		X	

DESOTO COUNTY PRIMARY SHELTERS	DESIGNATED AREAS OF SAFETY			POWER			WASTEWATER FACILITY		WATER		MAXIMUM PARKING CAPABILITIES		SANITARY FACILITIES		FOOD CAPABILITY	
	Identification	Planned Capacity 20 sq. feet	Planned Capacity 40 sq. feet	Electric	Gas	Auxiliary	Independent	Dependent	Independent	Dependent	Developed	Undeveloped	Restrooms	Showers	Yes	No
7. Nocatee Elementary	Media Center	150	75	X			X		X		70	420	X	one		X
TOTAL		2,435	1,217													

HARDEE COUNTY PRIMARY SHELTERS	DESIGNATED AREAS OF SAFETY			POWER			WASTEWATER FACILITY		WATER		MAXIMUM PARKING CAPABILITIES		SANITARY FACILITIES		FOOD CAPABILITY	
	Identification	Planned Capacity 20 sq. feet	Planned Capacity 40 sq. feet	Electric	Gas	Auxiliary	Independent	Dependent	Independent	Dependent	Developed	Undeveloped	Restrooms	Showers	Yes	No
1. Bowling Green Elementary		300	150	X				X		X	50	?	X			X
2. Hardee Jr. High	Gym	350	175													
	North Campus Hallways	150	75													
	South Campus Hallways	25	12													
	Industrial Arts Building	75	37													
		600	299	X	X			X		X	25	500	X	X	X	
3. Hardee Sr. High	Gym	500	250	X				X		X	35	400	X	X	X	
4. Zolfo Springs Civic Center		150	75				X		X		50	75	X			
5. Zolfo Springs Elementary	Main Building															
	Library	90	45													
	10 classrooms	420	210													
	8 classrooms	360	180													
	2 classrooms	98	49													
		968	484	X			X			X	50	700	X			X
TOTAL		2,518	1,258													

HIGHLANDS COUNTY PRIMARY SHELTERS	DESIGNATED AREAS OF SAFETY			POWER			WASTEWATER FACILITY		WATER		MAXIMUM PARKING CAPABILITIES		SANITARY FACILITIES		FOOD CAPABILITY	
	Identification	Planned Capacity 20 sq. feet	Planned Capacity 40 sq. feet	Electric	Gas	Auxiliary	Independent	Dependent	Independent	Dependent	Developed	Undeveloped	Restrooms	Showers	Yes	No
1. Missionary Church	Fellowship Hall	40	20													
	Office	5	2													
	Primary Classroom	6	3													
	Youth Room	6	3													
	Adult Classroom	6	3													
	Sanctuary	55	27													
	Hall	12	6													
		130	64	X			X		X		250	420	X		X	
2. Walker Memorial Jr. Academy	Gym	500	250	X			X		X		150	70	X		X	
3. First Baptist Church	Social Hall	100	50													
	Recreation Bldg.	110	55													
		210	105	X				X		X	200	0	X		X	
4. Avon Park High School	Building # 1															
	All Rooms	254	127													
	Building # 2															
	30 Rooms	1,000	500													
	Building # 3															
	Rooms 401-412	750	375													
	Gym	1,050	525													
		3,054	1,527	X				X		X	200	1,400	X	X	Limited	
SUBTOTAL		3,894	1,946													

HIGHLANDS COUNTY PRIMARY SHELTERS	DESIGNATED AREAS OF SAFETY			POWER			WASTEWATER FACILITY		WATER		MAXIMUM PARKING CAPABILITIES		SANITARY FACILITIES		FOOD CAPABILITY	
	Identification	Planned Capacity 20 sq. feet	Planned Capacity 40 sq. feet	Electric	Gas	Auxiliary	Independent	Dependent	Independent	Dependent	Developed	Undeveloped	Restrooms	Showers	Yes	No
5. South Florida Jr. College	Gym	1,178	589													
	Building # 8 Second Floor	434	217													
		1,612	806	X				X		X	650	1,000	X	X		
6. Sebring Middle School	Commons	200	100													
	Library	150	75													
	Cafeteria	130	65													
	Rooms 135-139	159	78													
	Rooms 100-108	360	180													
	Band Room	100	50													
	Music Room	50	25													
		1,149	573	X				X		X	75	700	X	X	X	
7. City Pier Youth Center		125	62	X				X		X	75	0	X			
8. Highlands County Courthouse	Basement	65	32	X				X		X	200	420	X	X		X
SUBTOTAL		2,951	1,473													

HIGHLANDS COUNTY PRIMARY SHELTERS	DESIGNATED AREAS OF SAFETY			POWER			WASTEWATER FACILITY		WATER		MAXIMUM PARKING CAPABILITIES		SANITARY FACILITIES		FOOD CAPABILITY	
	Identification	Planned Capacity 20 sq. feet	Planned Capacity 40 sq. feet	Electric	Gas	Auxiliary	Independent	Dependent	Independent	Dependent	Developed	Undeveloped	Restrooms	Showers	Yes	No
9. 1st Presbyterian Church Education Building		400	200	X				X		X	200	?	X			
10. Fred Wild Elementary	Lunch Room Main Building	150 172 322	75 86 161	X				X		X	150	420			Limited	
11. Agricultural Center		308	154	X			X		X		200	700	X			X
12. Lake Placid High School	Gym Commons	600 385 985	300 192 492	X				X		X	200	280	X	X	X If power available	
13. Miller Warehouse		N/A	N/A	X				X		X	100	N/A	N/A	N/A		X
SUBTOTAL		2,015	1,007													

HIGHLANDS COUNTY PRIMARY SHELTERS	DESIGNATED AREAS OF SAFETY			POWER			WASTEWATER FACILITY		WATER		MAXIMUM PARKING CAPABILITIES		SANITARY FACILITIES		FOOD CAPABILITY	
	Identification	Planned Capacity 20 sq. feet	Planned Capacity 40 sq. feet	Electric	Gas	Auxiliary	Independent	Dependent	Independent	Dependent	Developed	Undeveloped	Restrooms	Showers	Yes	No
14. St. Regis Paper Co. Warehouse		500	250	X		Battery	X		X		200	2,000	X			X
15. Lake Placid Grove Warehouse		250	125	X			X			X	1,000	0	X			X
SUBTOTAL		750	375													
TOTAL		9,610	4,801													

OKEECHOBEE COUNTY PRIMARY SHELTERS	DESIGNATED AREAS OF SAFETY			POWER			WASTEWATER FACILITY		WATER		MAXIMUM PARKING CAPABILITIES		SANITARY FACILITIES		FOOD CAPABILITY	
	Identification	Planned Capacity 20 sq. feet	Planned Capacity 40 sq. feet	Electric	Gas	Auxiliary	Independent	Dependent	Independent	Dependent	Developed	Undeveloped	Restrooms	Showers	Yes	No
1. Moose Lodge	Lodge Room	81	40													
	Club Room	64	32													
		145	72	X			X		X		35	100	X		X	
2. Okeechobee Jr. High	Gym	356	178	X			X			X	50	2,520	X	X		X
3. Okeechobee Sr. High	Gym	530	265													
	Science Bldg.	180	90													
		710	355	X			X			X	200	5,000	X	X	Limited	
4. Okeechobee City Hall	Council Chambers	46	23													
	Public Works Ofc	15	8													
	Fire Station	20	10													
	Clerk's Ofc	40	20													
		121	61	X		X		X		X	40	420	X			X
5. 6th Grade Center	2 Hallways	12	6	X	Battery			X		X	40	1,260	X			X
SUBTOTAL		1,344	672													

OKEECHOBEE COUNTY PRIMARY SHELTERS	DESIGNATED AREAS OF SAFETY			POWER			WASTEWATER FACILITY		WATER		MAXIMUM PARKING CAPABILITIES		SANITARY FACILITIES		FOOD CAPABILITY	
	Identification	Planned Capacity 20 sq. feet	Planned Capacity 40 sq. feet	Electric	Gas	Auxiliary	Independent	Dependent	Independent	Dependent	Developed	Undeveloped	Restrooms	Showers	Yes	No
6. North Elementary	Cafeteria Hallways, Class-rooms	130	65													
		Limited - no auxiliary power, no windows														
		486	243	X			X			X	85	840	X		Limited	
7. South Elementary	Media Center	172	86	X	Battery		X			X	100	2,000	X	One		X
SUBTOTAL		658	329													
TOTAL		2,002	1,001													

POLK COUNTY PRIMARY SHELTERS	DESIGNATED AREAS OF SAFETY			POWER			WASTEWATER FACILITY		WATER		MAXIMUM PARKING CAPABILITIES		SANITARY FACILITIES		FOOD CAPABILITY	
	Identification	Planned Capacity 20 sq. feet	Planned Capacity 40 sq. feet	Electric	Gas	Auxiliary	Independent	Dependent	Independent	Dependent	Developed	Undeveloped	Restrooms	Showers	Yes	No
1. Kathleen Elementary School	Classrooms	400	200	X			X		X		20	70	X		X	
2. Lake Gibson Jr. High School		500	250	X			X			X	90	1,400	X	X	X	
3. Padgett Elementary	Primary Teaching Area	600	300	X			X		X		35	420	X		X	
4. Griffin Elementary	Library Hall Classrooms	66 90 156 312	33 45 78 156	X			X				25	280	X		X	
5. North Lakeland Elementary	Library	270	135	X				X		X	30	560	X		X	
SUBTOTAL		2,082	1,041													

POLK COUNTY PRIMARY SHELTERS	DESIGNATED AREAS OF SAFETY			POWER			WASTEWATER FACILITY		WATER		MAXIMUM PARKING CAPABILITIES		SANITARY FACILITIES		FOOD CAPABILITY	
	Identification	Planned Capacity 20 sq. feet	Planned Capacity 40 sq. feet	Electric	Gas	Auxiliary	Independent	Dependent	Independent	Dependent	Developed	Undeveloped	Restrooms	Showers	Yes	No
6. Winston Elementary	Library	270	135	X			X			X	40	420	X		X	
7. Kathleen Sr. High School	Band Room	90	45													
	Choral Room	60	30													
	Library	400	200													
	Hall	90	45													
	Hall	60	30													
	Hall	80	40													
	Hall	80	40													
		860	430	X			X			X	200	1,400	X	X	X	
8. John Cox Elementary	Building # 1															
	Rooms 001-008	231	116													
	011-014	111	56													
	017-022	161	82													
	025	96	48													
	Lunchroom	101	52													
		700	354	X	X			X		X	15	0	X		X	
9. Combee Elementary	Media Center	314	157													
	Dining Room	168	84													
		482	241	X	X		X			X	50	?	X	None	X	
SUBTOTAL		2,312	1,160													

POLK COUNTY PRIMARY SHELTERS	DESIGNATED AREAS OF SAFETY			POWER			WASTEWATER FACILITY		WATER		MAXIMUM PARKING CAPABILITIES		SANITARY FACILITIES		FOOD CAPABILITY	
	Identification	Planned Capacity 20 sq. feet	Planned Capacity 40 sq. feet	Electric	Gas	Auxiliary	Independent	Dependent	Independent	Dependent	Developed	Undeveloped	Restrooms	Showers	Yes	No
10. Seth McKeel Jr. High	75% of Facility	1,000	500	X				X		X	125	280	X	X	X	
11. Jessee Keen Elementary	WestAddition Halls	300 200 500	150 100 250	X				X		X	30	280	X		X	
12. Lakeland Sr. High	Gym	400	200	X	X	X		X		X	300	1,400	X	X	X	
13. Crystal Lake Jr. High	Library Music Room Hall	165 60 200 425	82 30 100 212	X				X		X	100	480	X	X	X	
14. Southwest Jr. High	Library Band & Music	186 150 336	93 75 168	X				X		X	50	140	X	X	X	
SUBTOTAL		2,661	1,330													

POLK COUNTY PRIMARY SHELTERS	DESIGNATED AREAS OF SAFETY			POWER			WASTEWATER FACILITY		WATER		MAXIMUM PARKING CAPABILITIES		SANITARY FACILITIES		FOOD CAPABILITY	
	Identification	Planned Capacity 20 sq. feet	Planned Capacity 40 sq. feet	Electric	Gas	Auxiliary	Independent	Dependent	Independent	Dependent	Developed	Undeveloped	Restrooms	Showers	Yes	No
15. Cleveland Court Elementary	Cafeteria	73	36	X	X			X		X	35	On Street	X	None	X	
16. Oscar Pope Elementary	Pod Pod	170 210 380	85 105 190	X			X			X	75	140	X		X	
17. Carlton Palmore Elementary	2 Pods	300	150	X				X		X	25	140	X		X	
18. Polk Opportunity School	Auditorium	417	208	X				X		X	25	70	X			X
19. Crystal Lake Elementary	Media Center	200	100	X	X			X		X	75	280	X	One	X	
SUBTOTAL		1,370	684													

POLK COUNTY PRIMARY SHELTERS	DESIGNATED AREAS OF SAFETY			POWER			WASTEWATER FACILITY		WATER		MAXIMUM PARKING CAPABILITIES		SANITARY FACILITIES		FOOD CAPABILITY	
	Identification	Planned Capacity 20 sq. feet	Planned Capacity 40 sq. feet	Electric	Gas	Auxiliary	Independent	Dependent	Independent	Dependent	Developed	Undeveloped	Restrooms	Showers	Yes	No
20. Polk Vocational Technical	75% of Total Facility	1,000	500	X			X			X	150	560	X	X	X	
21. Lakeland Highlands Jr. High	80% of Total School	900	450	X			X			X	150	420	X	X	X	
22. Medulla Elementary	West Wing															
	11 Classrooms	400	200													
	Primary Building															
	6 Classrooms	250	125													
	Cafeteria	156	78													
		806	403	X	X		X			X	50	0	X	One	X	
23. Scott Lake Elementary	75% of Bldg.	600	300	X			X			X	70	280	X		X	
24. Mulberry Elementary	Building #008 Room #005	225	112	X				X		X	30	900	X			X
SUBTOTAL		3,531	1,765													

POLK COUNTY PRIMARY SHELTERS	DESIGNATED AREAS OF SAFETY: Identification	Planned Capacity: 20 sq. feet	Planned Capacity: 40 sq. feet	POWER: Electric	POWER: Gas	POWER: Auxiliary	WAS[redacted]EWA[redacted] FACILITY: Independent	WAS[redacted]EWA[redacted] FACILITY: Dependent	WATER: Independent	WATER: Dependent	[redacted]XIM[redacted]PARE[redacted] CAPABILITIES: Developed	[redacted]XIM[redacted]PARE[redacted] CAPABILITIES: Undeveloped	[redacted]SAN[redacted]Y FACILITIES: Restrooms	[redacted]SAN[redacted]Y FACILITIES: Showers	[redacted]D CAPABILITY: Yes	[redacted]D CAPABILITY: No
25. Mulberry Sr. High	Library	360	180	X				X		X	N/A		X	X	X	
26. Highland City Elementary	Hallways	150	75	X				X		X	31	420	X		X	
27. James E. Stephens Elementary	Primary Secondary	1,000 1,000 2,000	500 500 1,000	X				X		X	75	140	X	One	X	
28. Bartow Middle School	Lunch room/ Auditorium Library 10 Classrooms	151 80 467 698	75 40 233 348					X		X	25	1,120	X	One	X	
29. Bartow Sr. High	Library Music Room	264 58 322	132 29 161	X				X		X	150	280	X	X	X	
SUBTOTAL		3,530	1,764													

POLK COUNTY PRIMARY SHELTERS	DESIGNATED AREAS OF SAFETY			POWER			WASTEWATER FACILITY		WATER		MAXIMUM PARKING CAPABILITIES		SANITARY FACILITIES		FOOD CAPABILITY	
	Identification	Planned Capacity 20 sq. feet	Planned Capacity 40 sq. feet	Electric	Gas	Auxiliary	Independent	Dependent	Independent	Dependent	Developed	Undeveloped	Restrooms	Showers	Yes	No
30. Bartow Jr. High	Classrooms 049-052	150	75													
	Library & rooms	200	100													
	Classrooms 005-010	210	105													
	Classrooms 021-023	110	55													
		670	335	X				X		X	100	1,400	X	X	X	
31. Union Academy	Music Room	62	31	X				X		X	100	420	X	X	X	
32. Polk City Elementary	Pod Annex	350	175													
	Hallways	60	30													
		410	205	X				X		X	20	140	X		X	
33. Lena Vista Elementary	Pod	500	250	X				X		X	75	420	X		X	
34. Auburndale Sr. High	Library	300	150													
	Band Room	65	32													
		365	182	X				X		X	75	280	X	X	X	
SUBTOTAL		2,007	1,003													

POLK COUNTY PRIMARY SHELTERS	DESIGNATED AREAS OF SAFETY			POWER		WASTEWATER FACILITY		WATER		MAXIMUM PARKING CAPABILITIES		SANITARY FACILITIES		FOOD CAPABILITY	
	Identification	Planned Capacity 20 sq. feet	Planned Capacity 40 sq. feet	Electric	Gas Auxiliary	Independent	Dependent	Independent	Dependent	Developed	Undeveloped	Restrooms	Showers	Yes	No
35. Auburndale Jr. High	Band Room	78	39												
	Chorus Room	78	39												
	Conference Rm.	45	22												
	Conference Rm.	45	22												
	20 Classrooms @ 900 sq. ft.	900	450												
		1,146	572	X	X		X		X	100	560	X	X	X	
36. Walter Caldwell Elementary	Pod	400	200	X			X		X	25	280	X		X	
37. Auburndale Central Elementary	Cafetorium Building # 8 Room 010	140	70	X	Fuel Oil		X		X	30	140	X	None	X	
38. Lake Alfred Elementary		300	150	X			X		X	35	280	X		X	
SUBTOTAL		1,986	992												

POLK COUNTY PRIMARY SHELTERS	DESIGNATED AREAS OF SAFETY			POWER			WASTEWATER FACILITY		WATER		MAXIMUM PARKING CAPABILITIES		SANITARY FACILITIES		FOOD CAPABILITY	
	Identification	Planned Capacity 20 sq. feet	Planned Capacity 40 sq. feet	Electric	Gas	Auxiliary	Independent	Dependent	Independent	Dependent	Developed	Undeveloped	Restrooms	Showers	Yes	No
39. Ridge Vocational Technical Center	Student Service Center	200	100	X			X		X		400	1,400	X	X	Limited	
40. Garner Elementary	Library Bldg. # 7 Admin. Annex # 9	85 300 385	42 150 192	X				X		X	100	600	X		X	
41. Jewett Elementary	Entire Facility	1,000	500	X				X		X	75	280	X		X	
42. Northeast Jr. High	Reading Bldg.	300	150	X				X		X	90	140	X	X	X	
43. Westwood Jr. High	Music room & Hallways	400	200	X				X		X	75	280	X	X	X	
44. Inwood Elementary	Building 001 Rooms 001-008	320	160	X	X			X		X	50	?	X	None	X	
SUBTOTAL		2,605	1,302													

POLK COUNTY PRIMARY SHELTERS	DESIGNATED AREAS OF SAFETY			POWER			WASTEWATER FACILITY		WATER		MAXIMUM PARKING CAPABILITIES		SANITARY FACILITIES		FOOD CAPABILITY	
	Identification	Planned Capacity 20 sq. feet	Planned Capacity 40 sq. feet	Electric	Gas	Auxiliary	Independent	Dependent	Independent	Dependent	Developed	Undeveloped	Restrooms	Showers	Yes	No
45. Elbert Elementary	Classrooms	600	300	X				X		X	30	280	X		X	
46. Dension Jr. High	75% of Bldg.	900	450	X				X		X	100	140	X	X	X	
47. Winter Haven Sr. High	Band & Music	150	75													
	Lecture Room	100	50													
	Classrooms	100	50													
		350	175	X				X		X	200	280	X	X	X	
48. Lake Shipp Elementary	Classrooms	350	175	X				X		X	35	140	X		X	
49. Snively Elementary	Building # 1															
	Lunchroom	168	84													
	Hallway	144	72													
		312	156	X	X		X		X		?	700	One		Limited	
50. Garden Grove Elementary	Entire Facility	900	450	X				X		X	40	280	X		X	
SUBTOTAL		3,412	1,706													

POLK COUNTY PRIMARY SHELTERS	DESIGNATED AREAS OF SAFETY			POWER			WASTEWATER FACILITY		WATER		MAXIMUM PARKING CAPABILITIES		SANITARY FACILITIES		FOOD CAPABILITY	
	Identification	Planned Capacity 20 sq. feet	Planned Capacity 40 sq. feet	Electric	Gas	Auxiliary	Independent	Dependent	Independent	Dependent	Developed	Undeveloped	Restrooms	Showers	Yes	No
51. Eagle Lake Elementary	Entire Bldg.	900	450	X				X		X	75	140	X		X	
52. Alturas Elementary	Bldg. # 5	400	200													
	Bldg. # 2	185	92													
		585	292	X	X				X		30	420	X		X	
53. Fort Meade Jr./Sr. High	Building A															
	Room 1	37	18													
	Room 1A	51	25													
	Room 1B	5	2													
	Room 5	46	23													
	Room 6	63	31													
	Room 7	98	49													
	Room 8	247	123													
	Room 10	40	20													
	Room 18	66	33													
	Room 19	38	19													
	Gym	800	400													
		1,491	743	X	Battery			X		X	177	5,000	X	X	X	
54. Lewis Elementary	Main Hall	155	77													
	Lunchroom	160	80													
		315	157													
SUBTOTAL		3,291	1,642													

POLK COUNTY PRIMARY SHELTERS	DESIGNATED AREAS OF SAFETY			POWER			FACILITY		WATER		CAPABILITIES		FACILITIES		CAPABILITY	
	Identification	Planned Capacity 20 sq. feet	Planned Capacity 40 sq. feet	Electric	Gas	Auxiliary	Independent	Dependent	Independent	Dependent	Developed	Undeveloped	Restrooms	Showers	Yes	No
55. Fort Meade Middle School	Cafeteria	150	75	X				X		X	40	500	X	X	X	
56. Davenport Elementary	Old Building Basement 6 rms.	145	72													
	Kindergarten 4 rooms	163	81													
	1st, 2nd, 3rd, Grade Pods	690	345													
	Library	323	160													
		1,321	658	X	X		X			X	70	420	X		X	
57. Bethune Elementary	Library	90	45	X				X		X	20	480	X		X	
58. Eastside Elementary	Learning Center	225	112													
	Reading Room	240	120													
		465	232	X				X		X	20	480	X		X	
SUBTOTAL		2,026	1,010													

POLK COUNTY PRIMARY SHELTERS	DESIGNATED AREAS OF SAFETY			POWER			WASTEWATER FACILITY		WATER		MAXIMUM PARKING CAPABILITIES		SANITARY FACILITIES		FOOD CAPABILITY	
	Identification	Planned Capacity 20 sq. feet	Planned Capacity 40 sq. feet	Electric	Gas	Auxiliary	Independent	Dependent	Independent	Dependent	Developed	Undeveloped	Restrooms	Showers	Yes	No
59. Haines City Sr. High	School Bldg.	100	500	X				X		X	150	560	X	X	X	
60. Haines City Jr. High	Library Industrial Arts	375 included above	187	X				X		X	50	700	X	X	X	
61. Alta Vista Elementary	Bldg. # 1 Dining Area Bldg. # 2 Rooms 12-24	129 360 489	64 180 244	X				X		X	65	420	X	X	X	
62. Janie Howard Wilson Elementary	Caferorium Library	35 25 60	17 12 29	X	Oil			X		X	36	700	X	One	X	
63. Lake Wales High School	All rooms	2,000	1,000	X				X		X	N/A	900	X	X	X	
SUBTOTAL		3,024	1,960													

POLK COUNTY PRIMARY SHELTERS	DESIGNATED AREAS OF SAFETY			POWER			WASTEWATER FACILITY		WATER		MAXIMUM PARKING CAPABILITIES		SANITARY FACILITIES		FOOD CAPABILITY	
	Identification	Planned Capacity 20 sq. feet	Planned Capacity 40 sq. feet	Electric	Gas	Auxiliary	Independent	Dependent	Independent	Dependent	Developed	Undeveloped	Restrooms	Showers	Yes	No
64. Roosevelt Elementary	Admin. Bldg. Library	75 110 185	37 55 92	X				X		X	40	280	X	X	X	
65. Spook Hill Elementary	New facility completed soon No info now.	500	250	X				X		X	50	480	X		X	
66. Polk Avenue Elementary	Hallways	187	93	X				X		X	30	280	X		X	
67. Hillcrest School	Cafetorium	157	78	X	X			X		X	40	280	X	None	X	
68. Lake Wales Jr. High	School Bldg.	1,000	500	X				X		X	100	420	X	X	X	
SUBTOTAL		2,029	1,013													

POLK COUNTY PRIMARY SHELTERS	DESIGNATED AREAS OF SAFETY			POWER			WASTEWATER FACILITY		WATER		MAXIMUM PARKING CAPABILITIES		SANITARY FACILITIES		FOOD CAPABILITY	
	Identification	Planned Capacity 20 sq. feet	Planned Capacity 40 sq. feet	Electric	Gas	Auxiliary	Independent	Dependent	Independent	Dependent	Developed	Undeveloped	Restrooms	Showers	Yes	No
69. Babson Park Elementary	C.R. Pod	200	100													
	Library	160	80													
		360	180	X			X			X	20	140	X		X	
70. Frostproof Jr./Sr. High	School Bldg.	1,000	500	X				X		X	100	560	X	X	X	
71. Frostproof Elementary	Reading Room	470	235													
	Learning Center	390	195													
		860	430	X				X		X	30		X		X	
SUBTOTAL		2,220	1,110													
TOTAL		38,086	19,482													

these residents will evacuate to public shelters in the Region. Some may evacuate to a more substantial conventional home of a friend or relative. Some may seek shelter at a hotel or motel. Some may evacuate out of the Region, and unfortunately some will refuse to evacuate at all. The majority of the vulnerable inland populations are expected to seek public shelter, however.

To better evaluate the tendencies of inland evacuees, the CFRPC contracted with the University of South Florida to conduct a survey of residents of each county. The telephone survey of 1,257 people was representative of each county's mobile home and non-mobile home populations. Because mobile homes are most vulnerable to hurricane hazards, mobile home residents were slightly oversampled. Information derived from the 13-item questionnaire is presented in tabular form in the University of South Florida's report (Appendix E); and is broken down by county. Some of the most important highlights are as follows:

1. The population in general and especially those who live in mobile homes is elderly. (Appendix E, Table 5)

2. Although a relatively small percentage of the residents need special assistance to evacuate or are without transportation, in absolute numbers this could be a substantial amount of people. (Appendix E, Tables 7,8,9)

3. Although a substantial percentage of the respondents indicated experience with hurricanes, this experience except for Okeechobee County was with Donna in 1960. (Appendix E, Table 15)

4. The National Weather Service is the source of advice, as to whether and when to evacuate, that people most frequently mentioned. (Appendix E, Table 19)

5. Most people will evacuate when ordered to do so, and mobile home dwellers would tend to evacuate prior to the order to do so. (Appendix E, Table 21)

6. If family members are home, respondents indicated they could be ready to leave almost immediately. (Appendix E, Table 20)

7. In general only one vehicle per resident will be used. (Appendix E, Table 26)

8. Most people would evacuate to public shelters within their own county. Based on these data, there will be a great demand placed on public shelters. (Appendix E, Table 29)

9. A substantial proportion of respondents do <u>not</u> know where their public shelter is. (Appendix E, Table 28)

The most important finding of the survey relates to anticipated public shelter use by inland residents. Referring to Table 29 of Appendix E, it is clear that a majority of mobile home residents in each county who named the type of shelter they would seek, indicated they would go to a public shelter. However, if one adds the percentage of mobile home residents who don't know where they would go to the "public shelter" respondents, the potential demand for public shelter is tremendous. Further, if the percentages of non-mobile home respondents who said they would seek public shelter or don't know where they would go, actually seek public shelter, the demand for public shelter in Central Florida increases dramatically. It is therefore important that local officials discourage people who live in substantially constructed conventional homes (and others who know of a non-public shelter), from going to a public hurricane shelter.

If one compares the expected coastal and inland demand for public shelter in Central Florida with the total shelter capacity in this Region, a deficit of space is evident for each regional scenario (Table 5).

E. Alternate Public Shelters

Knowing that a substantial public shelter deficit would exist, CFRPC staff developed a list of potential alternate shelters (Table 6). This list was derived mainly from crisis relocation plan host area facility listings, and other sources in the business and religious communities. It is a resource to be used to shrink the gap between the potentially tremendous number of evacuees seeking shelter, and the total number of designated shelters and shelter spaces.

As a caution, the buildings listed are potential alternate shelters. The majority of owners of the facilities listed were contacted with regard to using their facilities in a hurricane emergency (Appendix F), and as of October, 1982, approximately thirty (30) have responded in the affirmative.

The counties of DeSoto, Hardee and Okeechobee, which already have a minimal number of designated shelters, also have a minimal number of potential alternate shelters. Because of the rural nature of these counties, businesses, civic association buildings and other potential shelters are small - most too small to be considered for use as shelters.

A secondary objective in developing this list obviously was to reduce the tremendous volume of traffic which would enter the Region from coastal areas. In terms of safety, law enforcement, and traffic control, the more cars that can be removed from the regional road network, the better.

The question of an adequate pool of shelter managers to serve at these facilities resurfaces here. Aside from the fact that these potential shelters have not been inventoried, a shelter manager would be needed at each facility if it were to be used.

TABLE 5

PUBLIC SHELTER DEMAND/ADEQUACY

Regional Scenarios

	1	2	3	4	5	6
Total Shelter Demand (Coastal & Inland Evacuees)[1]	71,641	90,852	149,947	176,724	367,358	334,331
Total Shelter Capacity[2]	55,290	55,290	55,290	55,290	55,290	55,290
Shelter Surplus (Deficit)	(16,351)	(35,562)	(94,657)	(121,434)	(312,068)	(279,041)
Central Florida Counties Evacuating	Polk	Polk	DeSoto Hardee Polk	DeSoto Hardee Highlands Polk	All	All

TABLE 5
(continued)

PUBLIC SHELTER DEMAND/ADEQUACY

Regional Scenarios

	7	8	9	10	11	12
Total Shelter Demand (Coastal & Inland Evacuees)[1]	288,769	163,166	168,656	215,367	98,893	298,806
Total Shelter Capacity[2]	55,290	55,290	55,290	55,290	55,290	55,290
Shelter Surplus (Deficit)	(233,479)	(107,876)	(113,366)	(160,077)	(43,603)	(243,516)
Central Florida Counties Evacuating	All	DeSoto Hardee Highlands Okeechobee	DeSoto Hardee Highlands Okeechobee	DeSoto Hardee Highlands Okeechobee	DeSoto Hardee Highlands Okeechobee	None

[1]"Inland Evacuees" consist of estimates of vulnerable mobile home & flood plain residents expected to seek public shelter, and are broken down by county as follows:

DeSoto	5,200	Okeechobee	4,500
Hardee	2,500	Polk	37,000
Highlands	9,000	Region	58,200

[2]Designated primary & secondary shelter space based on 20 sq. ft. per person

TABLE 6
ALTERNATE SHELTERS
CENTRAL FLORIDA REGION

HARDEE COUNTY

FACILITY	ESTIMATED CAPACITY @ 20 sq. ft.	ESTIMATED CAPACITY @ 40 sq. ft.
1st Baptist Church of Bowling Green P.O. Box 398 Bowling Green, Florida 33834	84	42
1st Baptist Church of Wauchula P.O. Box 548 Wauchula, Florida 33873	838	419
Gardner Baptist Church Rt. 1 Zolfo Springs, Florida	148	74
St. Michael's Catholic Church Rt. 2 Box 8 Wauchula, Florida 33873	336	168
1st Assembly of God 813 South 8th Avenue Wauchula, Florida 33873	170	85
Riverview Heights Baptist 207 Park Drive Wauchula, Florida 33873	N/A	N/A
South Side Baptist P.O. Box 515 Wauchula, Florida	224	112
Oak Grove Baptist Rt. 1 Box 367 Wauchula, Florida 33873	316	158
Faith Presbyterian Church P.O. Box 1480 Wauchula, Florida 33873	266	133
1st Christian Church P.O. Box 96 Wauchula, Florida 33873	N/A	N/A
1st United Methodist P.O. Box 116 Wauchula, Florida 33873	698	349
New Hope Baptist Rt. 2 Box 357 Wauchula, Florida 33873	670	335

HARDEE COUNTY
ALTERNATE SHELTERS
(continued)

FACILITY	ESTIMATED CAPACITY @ 20 sq. ft.	ESTIMATED CAPACITY @ 40 sq. ft.
Northside Baptist 912 North 8th Avenue Wauchula, Florida 33873	208	104
Ft. Green Baptist Church Rt. 1 Box 144A Bowling Green, Florida	360	180
Zolfo Springs Church of God P.O. Box 145 Zolfo Springs, Florida	206	103
Wauchula Church of God North 7th Avenue P.O. Box 582 Wauchula, Florida	306	153
1st Baptist Church Zolfo Springs P.O. Box 14 Zolfo Springs, Florida	316	158
East Side Baptist Mission 407 Walton Avenue Wauchula, Florida	N/A	N/A
1st Presbyterian Church P.O. Box 8 Wauchula, Florida	N/A	N/A
1st United Methodist Church P.O. Box 236 Bowling Green, Florida 33834	N/A	N/A
TOTAL	5,146+	2,573+

HIGHLANDS COUNTY
ALTERNATE SHELTERS
(continued)

FACILITY	ESTIMATED CAPACITY @ 20 sq. ft.	ESTIMATED CAPACITY @ 40 sq. ft.
Church of the Brethren 700 Pine Street Sebring, Florida	1,164	582
1st Baptist Church Bldg. A 225 Lemon Street Sebring, Florida	824	412
Salvation Army 120 Ridgewood Drive Sebring, Florida	262	131
Sparks Disco Circle Avenue Sebring, Florida	354	177
Chamber of Commerce 309 Circle Avenue Sebring, Florida	42	21
BPOE Elks Club Lakeview Drive Sebring, Florida	462	231
Sebring Civic Center Center Avenue Sebring, Florida	306	153
Thee Pier Recreational Center (1) Center Avenue Sebring, Florida	50	25
Thee Pier Recreational Center (2) Center Avenue Sebring, Florida	208	104
VFW Lakeview Drive Sebring, Florida	234	117
Southside Baptist Sanctuary Commerce Avenue Sebring, Florida	596	298
Southside Baptist Fellowship Hall Commerce Avenue Sebring, Florida	274	137

HIGHLANDS COUNTY
ALTERNATE SHELTERS

(continued)

FACILITY	ESTIMATED CAPACITY @ 20 sq. ft.	ESTIMATED CAPACITY @ 40 sq. ft.
St. Catherine Catholic Church 827 Hickory Street Sebring, Florida	354	177
1st Presbyterian Church 319 Poinsettia Avenue Sebring, Florida	182	91
Christian Science Society 146 Franklin Street Sebring, Florida	70	35
1st Baptist Church Bldg. B 225 Lemon Street Sebring, Florida	128	64
TOTAL	5,510	2,755

DESOTO COUNTY
ALTERNATE SHELTERS
(continued)

FACILITY	ESTIMATED CAPACITY @ 20 sq. ft.	ESTIMATED CAPACITY @ 40 sq. ft.
Church of God U.S. 17 Brownville, Florida	100	50
Trinity Methodist Church 14 Oak Street Arcadia, Florida	914	457
Calvary Baptist Church S.R. 70 Arcadia, Florida	390	195
1st Assembly of God Church Tenth Avenue Arcadia, Florida	76	38
1st Assembly of God Tenth Avenue Arcadia, Florida	142	71
Church of God of Prophecy 215 Hickery Street Arcadia, Florida	96	48
Temple Baptist Church Mills Avenue Arcadia, Florida	82	41
1st Christian Church Elverano Avenue Arcadia, Florida	94	47
1st Christian School Elverano Avenue Arcadia, Florida	86	43
Central Missionary Baptist Church Cypress Street Arcadia, Florida	126	63
Church of God Oak Street Arcadia, Florida	154	77
Heritage Baptist Church 21 Polk Avenue Arcadia, Florida	860	430

DESOTO COUNTY
ALTERNATE SHELTERS
(continued)

FACILITY	ESTIMATED CAPACITY @ 20 sq. ft.	ESTIMATED CAPACITY @ 40 sq. ft.
Presbyterian Church Education Bldg. 209 Hickory Street Arcadia, Florida	266	133
Church of Christ Hickory Street Arcadia, Florida	82	42
Lutheran Church of Arcadia 1004 Hickory Street Arcadia, Florida	114	57
Apostolic Church of Jesus Christ 205 Luther Avenue Arcadia, Florida	176	88
St. Pauls Catholic Church 1208 Oak Street Arcadia, Florida	182	91
United Methodist Church Education Bldg. Gilcrest Avenue Fort Ogden, Florida	124	62
1st Baptist Church Classrooms Gilchrist Avenue Fort Ogden, Florida	276	138
New Testament Baptist Church U.S. 17 Fort Ogden, Florida	76	38
1st Baptist Church Bldg. A U.S. 17 Nocatee, Florida	76	38
1st Baptist Church Bldg. B U.S. 17 Nocatee, Florida	78	39
Church of God Bldg. A U.S. 17 Nocatee, Florida	74	39
Church of God Bldg. B U.S. 17 Nocatee, Florida	58	29

DESOTO COUNTY
ALTERNATE SHELTERS
(continued)

FACILITY	ESTIMATED CAPACITY @ 20 sq. ft.	ESTIMATED CAPACITY @ 40 sq. ft.
Mt. Ephraim Baptist Classroom S.R. 661 Nocatee, Florida	86	43
Pine Level Methodist Church Old Pine Level Pine Level, Florida	68	34
TOTAL	5,108	10,216

POLK COUNTY
ALTERNATE SHELTERS
(continued)

FACILITY	ESTIMATED CAPACITY @ 20 sq. ft.	@ 40 sq. ft.
1st Baptist Church 300 Bartow Avenue Auburndale, Florida	1,080	540
1st United Methodist Church 410 Ariana Avenue Auburndale, Florida	260	130
1st Presbyterian Church Pilaklakaha Auburndale, Florida	156	78
1st Missionary Baptist Bartow Auburndale, Florida	450	225
1st Assembly of God 607 Lemon Street Auburndale, Florida	214	107
First Baptist Church Annex 300 Bridgers Auburndale, Florida	784	392
VFW Post 4945 213 Lake Auburndale, Florida	130	65
Canaan Church 525 Bridgers Auburndale, Florida	120	49
1st Presbyterian Church Sunday School 410 Park Auburndale, Florida	176	88
Church of Christ 310 Orange Street Auburndale, Florida	622	311
Eastside Baptist Church 210 Pike Auburndale, Florida	140	70
1st Baptist Church 524 Arborvitae Lane Polk City, Florida	122	61

POLK COUNTY
ALTERNATE SHELTERS
(continued)

FACILITY	ESTIMATED CAPACITY @ 20 sq. ft.	ESTIMATED CAPACITY @ 40 sq. ft.
Victory Tabernacle 210 Dairy Road Auburndale, Florida	160	80
United Methodist Church Berkley Auburndale, Florida	120	59
Lena Vista Baptist Church Annex Luna Road Auburndale, Florida	180	90
Havendale Baptist Church Sunday School 2200 Avenue Y, N.W.	160	80
Knights of Columbus 3274 Avenue W, N.W. Winter Haven, Florida	200	100
Kingdom Hall of Witness 2211 28th St, N.W. Winter Haven, Florida	64	82
1st Baptist Church 1318 34th Street, N.W. Winter Haven, Florida	150	75
Humpty Dumpty Preschool 2219 31st Street, N.W. Winter Haven, Florida	154	77
Church of God Bldg. 1 1721 34th Street, N.W. Winter Haven, Florida	208	104
Mrs. Pearsons Preschool 2995 Avenue G, N.W. Winter Haven, Florida	100	50
County Court House Main Street Bartow, Florida	1,024	512

ALTERNATE SHELTERS

(continued)

FACILITY	ESTIMATED CAPACITY @ 20 sq. ft.	@ 40 sq. ft.
Methodist Church 455 Broadway Bartow, Florida	536	268
Associate Reformed Presbyterian Church 100 Stanford Avenue Bartow, Florida	520	260
1st Baptist Church 430 Church Street Bartow, Florida	936	468
1st Presbyterian Church 395 Stanford Street Bartow, Florida	302	151
Oak School Wilson Street Bartow, Florida	272	136
Main Street Baptist Church Main & Holland Bartow, Florida	404	202
First Church of Christ Science 495 Park Lane Bartow, Florida	88	44
Lake Ruth Baptist Church Annex Clover Street Bartow, Florida	64	32
Community Action 1150 Palmetto Bartow, Florida	400	200
Main Street Baptist Church Main Street Bartow, Florida	400	200
Polk County Social Service 3rd Avenue Bartow, Florida	850	425
Holy Trinity Education Bldg. Stuart & Floral Bartow, Florida	240	120

ALTERNATE SHELTERS
(continued)

FACILITY	ESTIMATED CAPACITY @ 20 sq. ft.	ESTIMATED CAPACITY @ 40 sq. ft.
Holy Trinity Education Bldg. Stuart & Floral Bartow, Florida	374	187
Church of the Nazerine 208 Hooker Street Bartow, Florida	120	60
Victory Tabernacle Hooker & Mill Bartow, Florida	200	100
Church of God Stuart Bartow, Florida	180	90
American Legion Post 3 1575 HWY 17 Bartow, Florida	74	37
1st Assembly of God 1345 Pine Level Avenue Bartow, Florida	84	42
Catholic Church School Kissingen Avenue Bartow, Florida	84	42
Asbury Methodist Church School Avendia Soledad Bartow, Florida	300	150
Catholic Church of St. Thomas Kissingen Avenue Bartow, Florida	140	70
St. James Church Magnolia & Fourth Bartow, Florida	234	117
Mt. Gilboa Church Palmetto & First Bartow, Florida	400	200
Church of Christ Main Street Bartow, Florida	74	37
Mt. Zion AME Church Scott & Palmetto Bartow, Florida	114	57

POLK COUNTY
ALTERNATE SHELTERS
(continued)

FACILITY	ESTIMATED CAPACITY @ 20 sq. ft.	@ 40 sq. ft.
Bartow Christian Church Wethelene Bartow, Florida	186	93
Methodist Church 455 Broadway Avenue Bartow, Florida	112	56
1st Presbyterian Church 355 Florida Avenue Bartow, Florida	140	70
Redeemer Lutheran Church 390 Parker Street Bartow, Florida	166	83
El Jon Motel 1460 Main Bartow, Florida	19	19
Bartow Civic Center Floral Street Bartow, Florida	1,440	720
Lake Ruth Baptist Church Clover Street Bartow, Florida	96	48
Trinity Church S.R. 5400 Bartow, Florida	80	40
Bryant Street Church Bryant Street Bartow, Florida	84	42
Northwood Baptist Missionary Lucile Bartow, Florida	124	62
Florida Sheriffs Girls Villa HWY 60 Bartow, Florida	374	187
Macedonia Missionary Baptist Garfield Bartow, Florida	140	70

POLK COUNTY
ALTERNATE SHELTERS
(continued)

FACILITY	ESTIMATED CAPACITY @ 20 sq. ft.	ESTIMATED CAPACITY @ 40 sq. ft.
1st Baptist Church 80 Foot Road Bartow, Florida	180	90
Alturas Methodist Church 3rd Street Alturas, Florida	190	95
Lake Buffum Baptist Church Buffum Road Alturas, Florida	240	120
Alturas Assembly of God Alturas Road Alturas, Florida	320	160
1st Baptist Church Alturas Road Alturas, Florida	120	60
Moose Lodge Moose Club Road Bartow, Florida	200	100
Evangel Temple Old Bartow Road Bartow, Florida	240	120
1st Baptist Church Maple St. & U.S. HWY 31 Davenport, Florida	306	153
City Hall U.S. HWY 17-92 Davenport, Florida	200	100
Spartan Inn Route 27 Davenport, Florida	N/A	N/A
Ramada Inn Route 27 Davenport, Florida	N/A	N/A

POLK COUNTY
ALTERNATE SHELTERS
(continued)

FACILITY	ESTIMATED CAPACITY @ 20 sq. ft.	@ 40 sq. ft
Dundee Baptist Church Annex Main Dundee, Florida	240	120
Church of Christ Main Street Dundee, Florida	300	150
Dundell Methodist Church Third Street Dundee, Florida	230	115
Baptist Temple Center Street Dundee, Florida	174	87
Holiday Inn HWY 27 Dundee, Florida	40	40
Sheraton Hotel HWY 540 Winter Haven, Florida	N/A	N/A
Lake Peirce Baptist Canal Road Winter Haven, Florida	96	48
Holy Cross Church HWY 540 Winter Haven, Florida	150	75
Hope Presbyterian Church Cypress Garden Winter Haven, Florida	594	297
St. Johns United Methodist Cypress Garden Winter Haven, Florida	360	180
Welcome Baptist Church HWY 542 Dundee Winter Haven, Florida	112	56
Pentecostal Church HWY 544 Winter Haven, Florida	100	52

POLK COUNTY
ALTERNATE SHELTERS
(continued)

FACILITY	ESTIMATED CAPACITY @ 20 sq. ft.	ESTIMATED CAPACITY @ 40 sq. ft.
Church of Christ 2nd Street Winter Haven, Florida	120	60
Baptist Church HWY 544 Winter Haven, Florida	280	140
1st Baptist Annex 600 Eagle Avenue Eagle Lake, Florida	314	157
Church of Christ 261 3rd Street Eagle Lake, Florida	200	100
Assembly of God School 274 Gilbert Street Eagle Lake, Florida	240	120
Church of God 408 Snively Avenue Eloise, Florida	160	80
Church of God Rifle Range Road Wahneta, Florida	100	50
1st Baptist Church Rifle Range Road Wahneta, Florida	112	56
Quality Inn Cypress Gardens Winter Haven, Florida	40	40
Ramada Inn Cypress Gardens Winter Haven, Florida	26	26
Immanuel Baptist Spirit Lake Road Winter Haven, Florida	180	90
Calvary Assembly of God 3800 Recker Highway Winter Haven, Florida	252	126

ALTERNATE SHELTERS

(continued)

FACILITY	ESTIMATED CAPACITY @ 20 sq. ft.	@ 40 sq. ft
1st Baptist Church Hatfield Road Winter Haven, Florida	404	202
Westwood Baptist Church Avenue G, N.W. Winter Haven, Florida	400	200
Mrs. Pearsons Preschool 2995 Avenue G, N.W. Winter Haven, Florida	150	75
1st Freewill Baptist Church 27th St. N.W. Winter Haven, Florida	96	48
1st Baptist of Inn. 1302 34th Street, N.W. Winter Haven, Florida	160	80
Central Christian School 3900 Lake Blue Drive Winter Haven, Florida	180	90
1st Alliance Church 2401 34th Street, N.W. Winter Haven, Florida	120	60
Knights of Columbus Hall 3308 Avenue W, N.W. Winter Haven, Florida	200	100
Kingdom Hall of Jehova 2211 28th Street, N.W. Winter Haven, Florida	126	63
Free Will Baptist Church 717 27th Street, N.W. Winter Haven, Florida	120	60
1st Baptist Church BLDG. 2 33rd Street, N.W. Winter Haven, Florida	132	66
1st Alliance Church 34th Street, N.W. Winter Haven, Florida	144	72

POLK COUNTY
ALTERNATE SHELTERS
(continued)

FACILITY	ESTIMATED CAPACITY @ 20 sq. ft.	ESTIMATED CAPACITY @ 40 sq. ft.
Calvary Apostolic Church 1301 36th Street, N.W. Winter Haven, Florida	72	36
Immanuel Lutheran Church 1449 34th Street, N.W. Winter Haven, Florida	108	54
Church of God Bldg. 1 1724 34th Street, N.W. Winter Haven, Florida	264	132
Knights of Columbus Avenue W, N.W. Winter Haven, Florida	216	108
1st Church of God 214 Perry Street Ft. Meade, Florida	372	186
Ft. Meade Masonic Temple 6th Street Ft. Meade, Florida	80	40
Church of God Seminole Ft. Meade, Florida	94	47
Church of God French Ft. Meade, Florida	112	56
American Legion Hall U.S. 17 Ft. Meade, Florida	108	54
Charleston Avenue Church Charleston Avenue Ft. Meade, Florida	150	75
First Methodist Church Broadway Ft. Meade, Florida	424	212
1st Assembly of God 211 8th Street Ft. Meade, Florida	216	108

ALTERNATE SHELTERS

(continued)

FACILITY	ESTIMATED CAPACITY @ 20 sq. ft.	@ 40 sq. ft.
Calvary Missionary Baptist Perry Ft. Meade, Florida	90	45
Kathleen Baptist 2nd Street Kathleen, Florida	400	200
Masonic Hall Wall Street Frostproof, Florida	88	44
Church of God S.R. 630 Frostproof, Florida	84	42
West Frostproof Baptist Church Frostproof Road Frostproof, Florida	92	46
1st Methodist Church Auditorium Devane Street Frostproof, Florida	100	51
1st Methodist Church School Devane Street Frostproof, Florida	176	88
1st Baptist Church Oak Street Frostproof, Florida	272	136
Church of Christ 1st Street Frostproof, Florida	100	56
Southside Baptist Church Alternate 27 Frostproof, Florida	146	73
Faith Community Church HWY 580 Haines City, Florida	50	25
Calvary Baptist Church Smith Haines City, Florida	84	42
Masonic Temple 47 6th Street Haines City, Florida	378	189

POLK COUNTY
ALTERNATE SHELTERS
(continued)

FACILITY	ESTIMATED CAPACITY @ 20 sq. ft.	@ 40 sq. ft.
Palm Crest Hotel Hinson Street Haines City, Florida	702	351
1st Baptist Church 1st & Ledwith Haines City, Florida	564	282
Westside Baptist Church Polk City Road Haines City, Florida	100	49
Florida National Guard 6th Street Haines City, Florida	200	100
Church of the Nazarene Robinson Drive Haines City, Florida	70	35
Catholic Church of the Transfiguration Robinson Drive Haines City, Florida	96	48
Central Church of Christ Robinson Drive Haines City, Florida	150	75
St. Marks Episcopal Church 9th Street Haines City, Florida	128	64
St. Marks Episcopal Church 9th Street Haines City, Florida	60	30
1st Assembly of God 14th Street Haines City, Florida	60	30
Church of God 1718 Melbourne Avenue Haines City, Florida	148	74
Church of God Sunday School 1718 Melbourne Avenue Haines City, Florida	122	61

ALTERNATE SHELTERS

(continued)

FACILITY	ESTIMATED CAPACITY @ 20 sq. ft.	@ 40 sq. ft.
Eastside Baptist Church 116 22nd Street Haines City, Floaird	420	210
New Mt. Zion Baptist Church 713 8th Street Haines City, Florida	90	45
New Mt. Zion Baptist Church School 713 8th Street Haines City, Florida	100	50
St. Mark AME Church 826 8th Street Haines City, Florida	108	54
Oakland Civic Center Avenue C Haines City, Florida	110	55
1st Baptist Church 370 Pierce Street Lake Alfred, Florida	118	59
Methodist Sunday School 130 Penn. Avenue Lake Alfred, Florida	62	31
Church of God Bldg. 1 140 Mallard Road Lake Alfred, Florida	68	34
Trinity Church Sunday School 2551 Havendale Boulevard Winter Haven, Florida	240	120
Calvary Baptist Church 3659 Derby Road Winter Haven, Florida	208	104
St. James Baptist Church 2212 Lucerne Park Rd. Winter Haven, Florida	134	67
Church of Christ 2101 Second Street, N.W. Winter Haven, Florida	112	56

ALTERNATE SHELTERS
(continued)

FACILITY	ESTIMATED CAPACITY @ 20 sq. ft.	@ 40 sq. ft.
Salvation Army Bldg 1 2020 Second Street, N.W. Winter Haven, Florida	180	89
Free Methodist Church 3019 Lake Alfred Rd. Winter Haven, Florida	100	50
Community Service Center 7301 Lynchburg Winter Haven, Florida	80	40
Lynchburg Baptist Church 4800 Lynchburg Winter Haven, Florida	156	78
1st Presbyterian Church 126 Massachusetts Lakeland, F/orida	478	239
Masonic Temple 212 Iowa Avenue Lakeland ,Florida	550	275
Southside Baptist Church 304 McDonald Street Lakeland, Florida	2,880	1,440
College Heights Methodist Church 942 South Blvd. Lakeland, Florida	544	272
West Minister Presbyterian Church Mosswood Rd Lakeland, Florida	522	262
Elks Lodge 108 Massachusetts Lakeland, Florida	700	350
1st Methodist Church 72 Lake Morton Drive Lakeland, Florida	892	446
Temple Emanuel 730 Lake Hollingsworth Drive Lakeland, Florida	430	215

ALTERNATE SHELTERS
(continued)

FACILITY	ESTIMATED CAPACITY @ 20 sq. ft.	@ 40 sq. ft
United Methodist Building 1140 McDonald Street Lakeland, Florida	586	293
Church of Christ 1807 Florida Ave. Lakeland, Florida	208	104
1st Christian Church Florida Ave. Lakeland, Florida	544	272
1st Baptist Church 300 Florida Ave. Lakeland, Florida	1,600	863
Parkview Baptist Church 509 Parkview Plaza Lakeland, Florida	554	277
Ramada Inn 601 Memorial Blvd. Lakeland, Florida	29	29
Holiday Inn 910 Memorial Blvd Lakeland, Florida	67	67
Church of Christ Oak Street Lakeland, Florida	204	102
Harmony Baptist Church 1002 Florida Ave Lakeland, Florida	204	102
1st Baptist Church Education Annex Quincy & Dakota Lakeland, Florida	300	150
Church of God Bldg. 1 740 Combee Road Lakeland, Florida	130	65
Lakewood Park Methodist Church 1140 Combee Road Lakeland, Florida	138	69
Carters Baptist Church 5201 Route 92 Lakeland, Flo-ida	142	71

ALTERNATE SHELTERS
(continued)

FACILITY	ESTIMATED CAPACITY @ 20 sq. ft.	@ 40 sq. ft.
Christ Baptist Bldg. 1 Hardin Combee Rd. Lakeland, Florida	218	109
Christ Baptist Bldg. 2 2929 Hardin Combee Rd. Lakeland, Florida	200	98
Eastside Baptist Church Eastside Drive Lakeland, Florida	202	101
Eastside Baptist Church Eastside Drive Lakeland, Florida	330	165
Church of God of Prophecy Dixie Hwy Auburndale, Florida	108	54
K-ville Assembly of God Bldg. 110 Palmetto Rd. Auburndale, Florida	62	31
1st Baptist Church Social Hall 1334 Rowell Auburndale, Florida	56	28
Toddlers Kindergarten 103 Hibriten Way Lakeland, Florida	80	40
American Legion Post 614 Orange Lakeland, Florida	360	180
Evangel Christian School 1360 Main Street Lakeland, Florida	900	450
Temple Baptist Church 1815 Edgewood Drive Lakeland, Florida	300	150
1st Alliance Church Edgewood Drive Lakeland, Florida	200	100
Imperial 400 Motel 740 Main Street Lakeland, Florida	15	15

(Continued)

FACILITY	ESTIMATED CAPACITY @ 20 sq. ft.	@ 40 sq. ft.
Methodist Church Cleveland Heights Blvd Lakeland, Florida	180	90
Calvary Baptist Church Nursery 1945 Florida Ave. Lakeland, Florida	168	84
Christ Lutheran Church 2715 Lakeland Hills Blvd Lakeland, Florida	80	41
1st Free Methodist Church 315 Granada Street Lakeland, Florida	120	65
Church of Christ Bldg. 1 Lakeland Hills Blvd. Lakeland, Florida	94	47
Knights of Columbus 2014 Lakeland Hills Blvd. Lakeland, Florida	160	80
Parkview Baptist Church 509 Parkview Plaza Lakeland, Florida	216	108
7th Day Adventist Church 1443 Gilmore Avenue Lakeland, Florida	66	33
7th Day Adventist Church 1443 Gilmore Avenue Lakeland, Florida	104	52
Holiday Inn 3405 So. Fla. Ave. Lakeland, Florida	43	43
Rama Inn 601 Memorial Blvd Lakeland, Florida	N/A	N/A
Best Western Motel Memorial Blvd Lakeland, Florida	36	36

ALTERNATE SHELTERS

(continued)

FACILITY	ESTIMATED CAPACITY @ 20 sq. ft.	ESTIMATED CAPACITY @ 40 sq. ft.
Lakeland Mall Part 1 Memorial Blvd Lakeland, Florida	7,400	3,700
Church of God Lake Wire Lakeland, Florida	266	133
Northside Church of Christ Quincy Lakeland, Florida	312	156
Hilton Inn U.S. 98 Lakeland, Florida	37	37
Bethel Baptist Church S,R, 35A Lakeland, Florida	400	200
Lions Club 1st Street Kathleen, Florida	100	50
Mason Lodge 1st Street Kathleen, Florida	60	30
Methodist Church Polk Avenue Kathleen, Florida	250	125
Days Inn Motel 3223 U.S. Hwy 98 Lakeland, Florida	60	60
Dutch Inns of America 3311 U.S. Hwy 98 Lakeland, Florida	N/A	N/A
American Veterans S.R. 33 Lakeland, Florida	3,200	1,600
Assembly of God S.R. 33 Polk City, Florida	304	152
1st Baptist Church Fourth Street Lake Wales, Florida	200	103

ALTERNATE SHELTERS
(continued)

FACILITY	ESTIMATED CAPACITY @ 20 sq. ft.	@ 40 sq. ft.
Central Avenue Baptist Church 69 Central Avenue Lake Wales, Florida	240	120
Central Avenue Baptist Church Annex 71 Central Ave. Lake Wales, Florida	320	160
Church of Christ 126 Wetmore Street Lake Wales, Florida	240	120
Church of Nazarene Annex Johnson Ave. Lake Wales, Florida	250	125
Church of God Annex 45 Walker Lake Wales, Florida	400	200
Lake Wales Family YMCA 203 Polk Lake Wales, Florida	96	--- 48
1st Christian Church Scenic Hwy Lake Wales, Florida	320	160
The Adventist Church Annex Burns Lake Wales, Florida	90	45
Church of God Main Street Bradley, Florida	120	60
Calvary Baptist Church 500 1st Avenue Mulberry, Florida	152	76
1st Methodist Church Annex Church Avenue Mulberry, Florida	270	135
Fellowship Baptist Church Old Rt. 37 Mulberry, Florida	134	67

ALTERNATE SHELTERS
(continued)

FACILITY	ESTIMATED CAPACITY @ 20 sq. ft.	ESTIMATED CAPACITY @ 40 sq. ft.
1st Community Church S.R. 540 A Mulberry, Florida	80	40
Holiday Inn N. Socrum Loop Rd Lakeland, Florida	25	25
Lakeland, Christian Schood Bldg. 1111 Forest Park St. Lakeland, Florida	280	140
1st Baptist Church Education Bldg. 198 Central Avenue Winter Haven, Florida	2,100	1,050
N.E. Winter Haven Recreational Center Avenue T Winter Haven, Florida	560	280
1st Church of Christian Science 652 Avenue L, N.W. Winter Haven, Florida	228	114
Southside Baptist Church 7th Street, S.W. Winter Haven, Florida	288	144
St. Paul Episcopal School 656 Avenue L, N.W. Winter Haven, Florida	360	180
Church of God Annex Avenue E . S.W. Winter Haven, Florida	120	60
St. Josephs School 535 Avenue M Winter Haven, Florida	480	240
St. Joseph Center 532 Avenue M Winter Haven, Florida	108	54
Beymer Church Annex 725 Lake Howard Drive Winter Haven, Florida	288	144

ALTERNATE SHELTERS

(continued)

FACILITY	ESTIMATED CAPACITY @ 20 sq. ft.	@ 40 sq. ft.
Winter Haven Mall 3rd Street Winter Haven, Florida	6,000	3,000
BPOE Post 1672 3rd Street Winter Haven, Florida	614	307
Civic Center of Winter Haven 250 Lake Silver Drive Winter Haven, Florida	480	240
Davenport Church of God Route 17 Davenport, Florida	194	97
Billiard's Parlor 126 Bay Street Davenport, Florida	160	80
1st Methodist Church 11 Market Street Davenport, Florida	214	107
Assembly of God Church 206 Pine Street Davenport, Florida	180	89
Evangelistic Temple Route 17 Loughman, Florida	100	51
Dundee Assembly of God Myrtle Street Dundee, Florida	100	52
Dundee Community House S.R. 542 Dundee, Florida	100	52
TOTAL	79,014+	39,846+

V. INTER-REGIONAL EVACUATION

This section and those following it form the essence of the Central Florida Regional Hurricane Shelter Plan. They incorporate and tie together the research explained previously. This section identifies who will be evacuating prior to hurricane landfall, where the evacuees will come from and where they will go. The regional impact of a hurricane will be clearly illustrated in this section.

As mentioned earlier, three regional hurricane scenarios, as developed by the Bureau, were selected for analysis: 1) A worst-case storm making landfall in Hillsborough County (Regional Scenario 3, illustrated in Figures 2 and 3); 2) A worst-case storm making landfall in Sarasota County (Regional Scenario 5, illustrated in Figures 2 and 4); and 3) The worst-case parallel storm (Regional Scenario 12, illustrated in Figures 2 and 5).

Obviously, evacuees will be crossing county lines in large numbers, and the actions taken in one county (coastal or inland) will affect the actions taken in several other counties.

The Tampa Bay and Southwest Florida regional evacuation plans have identified "evacuation time" as the most important element to be considered for regional evacuation. "Evacuation time" is defined as the sum of the time needed for mobilization of evacuees, the travel time involved in evacuation, the delay time caused by traffic volume exceeding roadway carrying capacity, and the time preceeding the onset of gale-force winds and/or roadway inundation. This concept is illustrated as Figure 6. The evacuation time of a region increases when several counties evacuate concurrently. In the Central Florida Region, because of the limited numbers of regional roads, and their configurations and conditions, carrying capacity will greatly influence evacuation time. Most roads in this region are two lane facilities with limited carrying capacities due to a combination of limited passing sight distances, deteriorated surfaces and/or poor surface drainage, and inadequate (narrow) shoulders. In several cases, the loading of vehicles onto the regional network will be slowed by limited carrying capacities. (To analyze traffic flow, the Florida Department of Transportation, 5th District, recommended that the following standards, based on Level of Service "E" be used[8]:

Undivided Higheays:	850 cars/hour/lane
Divided Highways:	1000 cars/hour/lane
Interstate Highways:	2000 cars/hour/lane)

The situation in Arcadia is illustrative of this point. Five two- lane roads (S.R. 72, Kings Highway, U.S. 17, S.R. 70, and S.R. 31) enter DeSoto County from the west and south, and converge at Arcadia. Only two two-lane roads

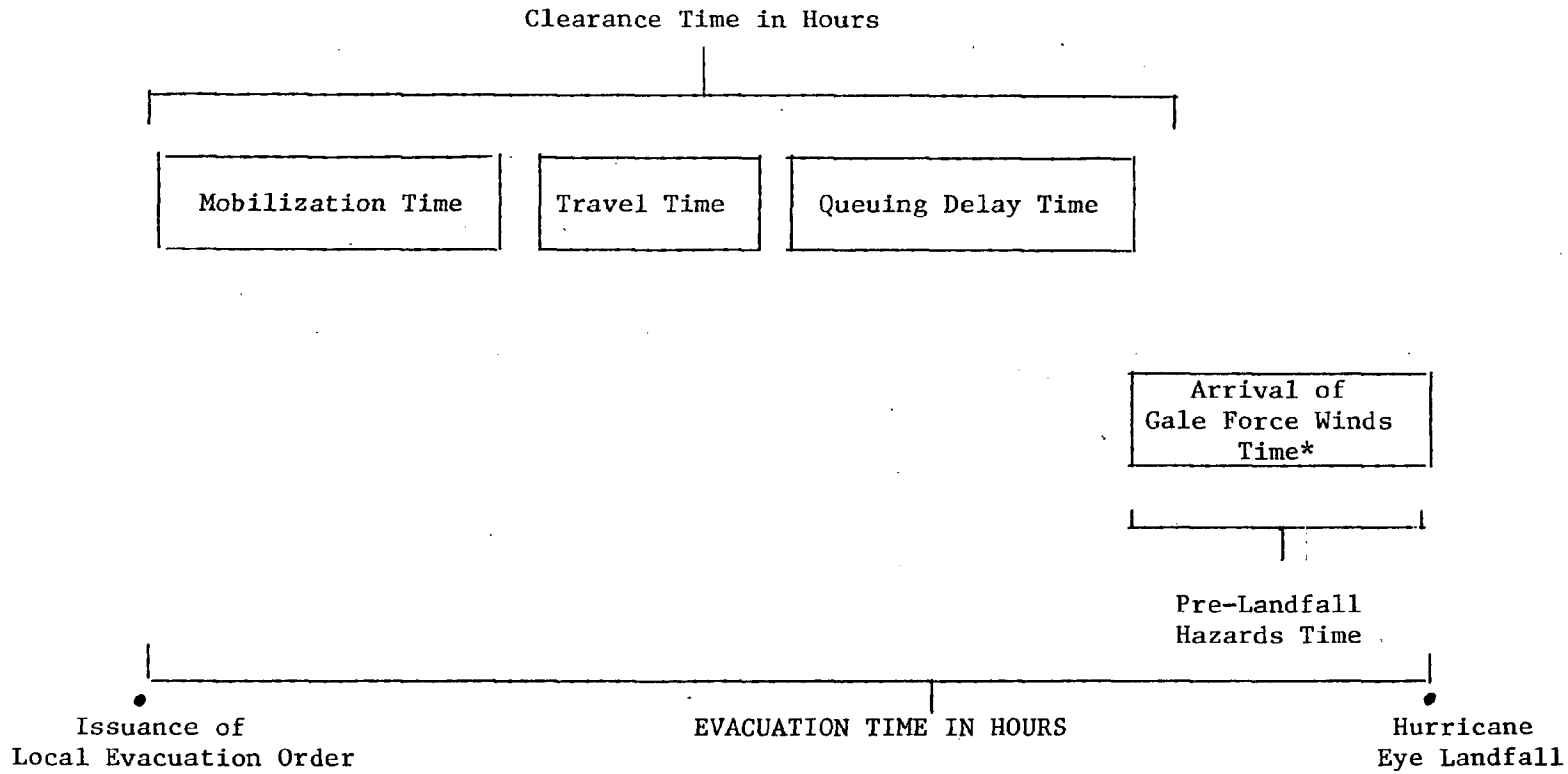
---

[8]"Levels of Service" (L.O.S.) are: A,B,C,D,E, and F; L.O.S. "A" being the best. L.O.S. "F" applies to a road with heavy, stop and go traffic. Thus, L.O.S. "E" is used as a conservative standard.

FIGURE 6

EVACUATION TIME CONCEPT

COMPONENTS OF EVACUATION TIME



*Also includes roadway inundation time.

are the means of egress from the city. (U.S. 17 to the north and S.R. 70 to the east). Using the evacuation schema for Scenario 12 as an example, one can see that once vehicles from Kings Highway, U.S. 17 and S.R. 31 are loaded onto S.R. 70 East, it would take some 29 hours for all 25,123 vehicles to reach U.S. 27. As one looks farther north at Hardee and Polk Counties, one sees a similar situation; more roads enter the counties to the west of U.S. 17 (a mostly two-lane, north-south route) than exit the counties to the east. This funnelling effect will increase the queuing and overall evacuation time of evacuees.

The inter-regional evacuation schemas for Scenarios 3,5, and 12 route traffic in such a manner that vehicles will not cross through intersections, thus keeping the traffic moving as smoothly as possible throughout the region. Further, the overall inter-regional evacuation plan centers on U.S. 27, a four-lane, north-south divided highway. U.S. 27 will be used as the major evacuation route in the region because of its capacity. As was alluded to above, however, getting vehicles to U.S. 27 may take some time, due to loading and queuing on the adjacent two-lane roads. To utilize U.S. 27, vehicles must first be loaded onto U.S. 17. As one moves north from DeSoto County on U.S. 17, vehicles are loaded onto U.S. 17 and turned north, while other vehicles already on U.S. 17 are diverted on east-west routes to U.S. 27. The volume on U.S. 17 is thus kept constant or lessened where possible, while the volume is increased on U.S. 27. To appreciate the increased carrying capacity of U.S. 27, one can again examine the evacuation schema for Scenario 12. Once the 12,123 vehicles are turned onto U.S. 27 in Highlands County, the divided highway's increased capacity will reduce the evacuation time to move all of the vehicles to some 12 hours.

Because of very limited shelter space in this Region, low roadway carrying capacities, and expected high loading and queuing time, the use of optimum evacuation routes to carry evacuees to the nearest shelters is not possible in most cases. Using the schema for Scenario 12 again, if one follows the traffic flow from one end of the Region to the other, one can see that some evacuees will be traveling for a long period of time. With the heavy volume of traffic expected in this Region in various scenarios, this situation is unfortunately unavoidable. (Because of this concern, and because the southern portion of the Region will be relatively unaffected in Scenario 3, a minimum number of evacuees are diverted through Okeechobee County in that particular scenario.)

With high evacuation times in this Region for several landfalling storms, comes the threat of the arrival of sustained gale-force (40 mph) winds and freshwater flooding. As was noted earlier, the onset of freshwater flooding generally approximates the onset of sustained gale-force winds. Both of these hazards will occur prior to eye landfall of a hurricane as wind and rain fields move across the state. In discussions with officials in each Central Florida county, CFRPC was able to identify sections of the regional road network which may be or will be susceptible to inundation. (See Figures 3,4, and 5)

Because of its low elevation and proximity to Charlotte Harbor, DeSoto County may have several roads breached by flooding. These include S.R. 72, Kings Highway, U.S. 17, and S.R. 31 - all regional roads and primary evacuation routes. Sections of roads which may be inundated are circled on the accompanying maps. Obviously, the objective of this planning process is to complete the inter-regional evacuation before the hazards preceding actual hurricane eye landfall make safe evacuation impossible. Local officials must consider that sustained gale-force winds may occur several hours before eye landfall.

Due to limited available shelter space, coastal evacuees will be assigned to shelters on a first-come, first-served basis. As shelters reach capacity, evacuees will be passed to other areas of the Region where shelter space exists. When all shelters in the Region reach capacity, evacuees will be passed to shelters in the East Central Florida Region.

Movement of traffic will be facilitated by traffic control points at critical intersections which will be manned by at least one law enforcement officer. Officers will set up road blocks using patrol cars, and other barricades, plus signs (if available) which will allow vehicles to pass through to local public or private shelters while maintaining orderly movement of inter-regional traffic. Obviously, adequate communication must exist between public shelters and traffic control points so that officers at the traffic control points will know when shelters are nearing capacity. Without proper organization and deployment of officers at critical intersections, the already high evacuation times alluded to above can only increase. Details of deployment of officers should be worked out by regional meetings of local law enforcement agencies, the Florida Highway Patrol, and Civil Defense authorities. The Inland Shelter Advisory Committee is the obvious coordinative mechanism through which such meetings can take place.

Lane use modification was discussed in several advisory subcommittee meetings and was rejected as a means to reduce clearance time. Reasons for rejection were that there are few regional evacuation routes which could be modified in the first place; emergency response to accidents or breakdowns may be hindered; and, according to FDOT and the Lakeland Traffic Engineer's office, modifying a four (4) lane road to allow three (3) lanes of traffic to flow in one direction would not decrease evacuation times because of motorists' unfamiliarity with such a configuration and because on-loading and off-loading of traffic on the facility would be relatively difficult (requiring additional manpower, etc.).

The volume of traffic entering into the Central Florida Region during a major evacuation makes accidents and breakdowns likely. As was mentioned above, most regional roads are two lane facilities with limited passing sight distances, deteriorated surfaces and/or poor surface drainage, and inadequate (narrow) shoulders. Narrow shoulders is the most significant of the roadway limitations. The removal of disabled vehicles to the side of the road must be immediate, especially on a two-lane road. As with inefficient traffic control points, any delay in the removal of accidents or disabled vehicles can only increase already high evacuation times. Two recommendations made by the Tampa Bay Hurricane Evacuation Plan regarding accidents and disabled vehicles may be applied to this Region:

First, where manpower resources make it possible, the critical traffic control points identified should be manned by two traffic control persons. This would allow one person to continue directing constant traffic movement while the other person supervised and facilitated the removal of any potential disabled vehicles away from the critical evacuation path of the intersection.

Second, special monitoring of historically inundated evacuation routes from freshwater should take place. The propensity for stalled and abandonded vehicles on these routes will naturally be higher. It is recommended that the identification and mapping of such routes throughout the Region be utilized as a guide for the emergency pre-positioning and dispatch of towing and rescue equipment.

VI. INTRA-REGIONAL EVACUATION

The Central Florida Region cannot shelter both the vulnerable inland (Central Florida) population and coastal evacuees. The Region, in fact, will be hard pressed to shelter inland evacuees alone. Based upon estimates of the vulnerable inland population expected to seek shelter (mobile home and flood plain residents)[9], Okeechobee, Highlands, Hardee, and DeSoto Counties will not have sufficient shelter space available for its evacuees. Polk County will have approximately the same number of shelter spaces available as Polk County evacuees. This shelter deficit will obviously be compounded if a significant number of non-mobile home residents seek public shelter. The Inland Shelter behavioral survey asked both mobile home residents and non-mobile home residents where they would evacuate. The percentage of non-mobile home residents in Polk, Hardee, Okeechobee, Highlands and DeSoto who said they would go to a public shelter was 52.6%, 33%, 32.9%, 51% and 44.2% respectively. If the percentages of non-mobile home residents who said they didn't know where they would go (over 24% in each county) were added to the figures above, as was done to estimate public shelter demand for mobile home residents, one can see that an overwhelming number of regional residents could evacuate to public shelters, whether they need to do so or not.

Intra-regional evacuation in Central Florida will be structured around evacuation zones, as illustrated in Figure 7. Because public shelters are concentrated in the major cities of DeSoto, Hardee and Okeechobee Counties, each of these counties was designated as an evacuation zone unto itself (Figures 8,9, and 10). Because shelters are dispersed in Highlands and Polk Counties, multiple zones were delineated in those two counties. Evacuation zones in Highlands County are illustrated in Figures 11(a) and 11 (b). Zones in Polk County are illustrated in Figures 12 (a) and 12 (b). Table 7 defines the boundaries of the Highlands County and Polk County evacuation zones, the intra-regional evacuation routes within each zone, and the specific primary shelters assigned to each zone.

Intra-regional sheltering will be on a first-come, first-served basis. Evacuation routes will be the shortest routes from an evacuee's residence to a public shelter. Evacuees who do not find space at the closest shelter

---

[9]Central Florida mobile home and flood plain residents expected to seek shelter are estimated to be 83,127 (region-wide).

TABLE 7

EVACUATION ZONES

ZONE NUMBER	ZONE BOUNDARIES	EVACUATION ROUTES	SHELTERS
P-1	NORTH: Pasco County line and U.S. 98 EAST: U.S. 98, S.R. 582 (W. Socrum Loop Rd.), Polk City Rd., McDonald Rd. SOUTH: I-4 WEST: Hillsborough and Pasco County lines.	W. Socrum Loop Rd. (S.R. 35A and S.R. 582), Banana/Wilder Rd, W. Campbell Rd, Duff Rd, Daughtery Rd, Deeson Rd, Knight Station/ Griffin Rd (S.R. 582), Bella Vista St., Kathleen Rd. (S.R. 35A), Providence Rd (U.S. 98)	Kathleen Elementary Kathleen Jr. High Griffin Elementary Winston Elementary
P-2	NORTH: Sumter and Lake County lines EAST: Hickman Rd (graded Rd. extension of S.R. 557 A) SOUTH: I-4, Socrum Loop/Polk City Rd. WEST: Socrum Loop Rd, U.S. 98	Old Polk City Rd, S.R. 33, S.R. 559A, S.R.559	Polk City Elementary
P-3	NORTH: Lake County Line EAST: Osceola County Line SOUTH: I-4 WEST: Hickman Rd. (graded Rd. extension of 557A)	U.S. 27, Deen Still Rd. (graded) S.R. 54, Vaughn Beauchamp Rd.	Polk City Elementary
P-4	NORTH and EAST: Osceola County line SOUTH: U.S. 17/92, U.S. 27, North City limit of Lake Hamilton, S.R. 546, and a line extending east from S.R. 546 to the Polk/Osceola Co. line. WEST: S.R. 557A, S.R. 557, Creek Rd., Evenhouse Rd, Jackson Rd, Old Haines City-Lake Alfred Rd, Fletchers Cut-off, North and East Shorelines of Lake Haines, East and South Shorelines of Lake Rochelle	U.S. 17/92, County Rd. 17, U.S. 27, S.R. 574, S.R. 580, S.R. 544, Hinson Ave. (Haines City) Peninsular Dr. (Haines City) Polk City Rd/ Minnie Ave. (Haines City), 10th St/Kingham Rd. (Haines City), Jackson Hwy. (Davenport)	Davenport Elementary Bethune Elementary Eastside Elementary Haines City Sr. High School Haines City Jr. High School Alta Vista Elementary School

TABLE 7
(continued)

EVACUATION ZONES

ZONE NUMBER	ZONE BOUNDARIES	EVACUATION ROUTES	SHELTERS
P-5	NORTH: I-4 EAST: S.R. 35A (Kathleen Rd.), S.R. 37 SOUTH: Cresap St./Lake Hunter Dr, Bennett/Highland St., S.R. 542 WEST: Polk/Hillsborough County line.	S.R. 35A, U.S. 92, U.S. 92 Business, S.R. 600A (Memorial Blvd.), Galloway Rd.	Kathleen Sr. High School Seth McKeel Jr. High School Jesse Keen Elementary
P-6	NORTH: I-4 EAST: S.R. 33 to Lakeland City Limit, Lake Parker Dr. SOUTH: 10th St/Parkview Place WEST: S.R. 35A	U.S. 98, S.R. 582, S.R. 700 (N. Florida Ave.), S.R. 33 (Lakeland Hills Blvd.)	North Lakeland Elementary
P-7	NORTH: 10th St./Parkview Place, south shoreline of Lake Parker, U.S. 92 EAST: S.R. 33A (Combee Rd) SOUTH: S.R. 33A (Edgewood DR.) WEST: S.R. 37 (So. Florida Ave.), S.R. 35A (Kathleen Rd.)	S.R. 37 (Florida Ave.), S.R. 600A (Memorial Blvd.), U.S. 92 (Lake Parker Dr.), U.S. 92 Business (Gary Rd.), U.S. 98, U.S. 98 Business, S.R. 33 (Massachusetts Ave/Lakeland Hills Blvd) S.R. 33A (Edgewood Dr.), Crystal Lake Dr.	Lime Street Elementary Lakeland High School Crystal Lake Elementary Crystal Lake Jr. High School Cleveland Court Elementary
P-8	NORTH: I-4 EAST: S.R. 33, Seabord Coastline R.R. Right-of-Way, S.R. 546, Saddle Creek SOUTH: U.S. 92, South shoreline of Lake Parker WEST: S.R. 33 from Lakeland City limit to I-4, I-4	Old Combee Rd., Tenoroc Mine Rd., S.R. 33A (Combee Rd.), S.R. 546 (Saddle Creek Rd.), Lake Parker Dr., East Lake Parker Dr.	Combee Elementary
P-9	NORTH: I-4 EAST: S.R. 655/Seaboard C.L.R.R. SOUTH: S.R. 546 WEST: Seaboard Coastline R.R., S.R. 33	Same as boundaries	Combee Elementary Lena Vista Elementary

TABLE 7
(continued)

EVACUATION ZONES

ZONE NUMBER	ZONE BOUNDARIES	EVACUATION ROUTES	SHELTERS
P-10	NORTH: I-4 EAST: East shore of Lake Mattie, Lake Mattie Rd., Adams Grove Rd, Lynchburg Rd. SOUTH: U.S. 92, west shoreline of Lake Jessie, S.R. 544A/Derby Rd. WEST: S.R. 655/Seaboard C.L.R.R.	S.R. 559, S.R. 559A, S.R. 655, U.S. 92, Ariana Blvd, Plaklakaha Ave., Bridgers Ave., U.S. 92 (Magnolia Ave.), S.R. 544A	Auburndale Sr. High School Auburndale Jr. High School Auburndale Middle School Bridgers Ave. Elementary School Auburndale Central Elementary Lena Vista Elementary School
P-11	NORTH: I-4 EAST: S.R. 557A, S.R. 557, Creek Rd. Evenhouse Rd., Jackson Rd., Old Haines City-Lake Alfred Rd., Fletchers cut-off, north & east shorelines of Lake Haines, east and south shorelines of Lake Rochelle SOUTH: U.S. 92 WEST: Lynchburg Rd., Adams Grove Rd, Lake Mattie Rd., east shoreline of Lake Mattie.	S.R. 557A, S.R. 557, S.R. 555, U.S. 17/92	Lake Alfred Primary School Lake Alfred Elementary
P-12	NORTH: U.S. 17/92 EAST: U.S. 27, West city limits of Lake Hamilton and Dundee SOUTH: Country Club Dr., Buckeye Loop Rd. WEST: West city limits of Winter Haven, west shoreline of Lake Smart, east shoreline of Lake Rochelle, south city limits of Lake Alfred, east shoreline of Lake Haines.	S.R. 544, Old Lucerne Park Rd.	Ridge Vocational Technical Center

TABLE 7
(continued)

EVACUATION ZONES

ZONE NUMBER	ZONE BOUNDARIES	EVACUATION ROUTES	SHELTERS
P-13	NORTH: S.R. 542, Bennett/Highland St., Lake Hunter Dr., Cresap St. EAST: S.R. 37 (Florida Ave.), S.R. 33A (Edgewood Dr.), S.R. 37B (Lakeland Highlands Rd.) SOUTH: S.R. 540A (Central Barn Rd.), Carter Rd., Shepherd Rd. WEST: Hillsborough County line	S.R. 542, Airport Rd., Drane Field Rd., Medulla/Pipkin Rd./Lake Miriam Dr., S.R. 540A, S.R. 37A (Scott Lake Rd.), S.R. 37B (Lakeland Highlands Rd.)	Southwest Jr. High School Carlton Palmore Elementary School Lakeland-Highlands Jr. High School Medulla Elementary School Scott Lake Elementary School
P-14	NORTH: U.S. 92 EAST: Saddle Creek SOUTH: S.R. 540, U.S. 98 WEST: S.R. 33A (Combee Rd.)	Maine Ave., Reynolds Rd., U.S. 98, S.R. 540	Oscar J. Pope Elementary School Polk Vocational Technical Center
P-15	NORTH: S.R. 546 (Saddle Creek Rd/ Old Dixie Hwy.) EAST: Phillips Rd., Howard Dr., U.S. 92, Thornhill Rd. SOUTH: S.R. 540 WEST: Saddle Creek	S.R. 542, U.S. 92	Westwood Jr. High School
P-16	NORTH: S.R. 544A EAST: West shoreline of Lake Jessie, Lake Jessie/Lake Idylwild Canal, Lake Idylwild/Lake Cannon Canal, Lake Cannon/Lake Howard Canal, Lake Howard/Lake May Canal, Lake May/Lake Shipp Canal SOUTH: Lake Shipp Dr, Ave Q. S.W., S.R. 540 WEST: Thornhill Rd, U.S. 92, Howard Dr., Phillips Rd.	Recker Hwy, S.R. 542, Spirit Lake Rd/42nd St. N.W., Jersey Rd, 26th St. N.W., 34th St. N.W., Coleman Rd, 20th St. N.W., 21st St. N.W., Lake Howard Dr. N.W., 24th St. N.W.	Garner Elementary School Inwood Elementary School Westwood Jr. High School

TABLE 7
(continued)

EVACUATION ZONES

ZONE NUMBER	ZONE BOUNDARIES	EVACUATION ROUTES	SHELTERS
P-24	NORTH: S.R. 60 (Main St.) EAST: Broadway Ave, Stuart Ave. SOUTH: Six Mile Creek/Cedar Branch WEST: S.R. 555	Main St, Broadway Ave, Stuart St, Clower St, S.R. 555, Kissingen Ave.	Bartow Civic Center Bartow High School Bartow Jr. High School
P-25	NORTH: North city limit of Bartow, U.S. 17, 91 Mine Rd, S.R. 60 EAST: S.R. 655A SOUTH: Mann Rd and a line extending from Mann Rd. to S.R. 559 WEST: Kissingen Ave, Stuart St., Broadway Ave.	S.R. 60 By-Pass, Main St., U.S. 17, Kissingen Ave.	Bartow Elementary School Bartow Jr. High School Bartow Sr. High School
P-26	NORTH: S.R. 555, S.R. 559, Rifle Range Rd, Eagle Lake Loop Rd/S.R. 540A EAST: Seaboard Coastline R.R. right-of-way SOUTH: S.R. 60 WEST: 91 Mine Rd	S.R. 559, S.R. 655, S.R. 60, Old Bartow-Lake Wales Rd.	Eagle Lake Elementary School
P-27	NORTH: Cedar Branch/Sixmile Creek, U.S. 17, Mann Rd. and a line extending from Mann Rd. to S.R. 559 EAST: S.R. 559 SOUTH: S.R. 640 WEST: S.R. 555	Same as Boundaries	Bartow Civic Center Bartow Jr. High School Bartow Sr. High School

TABLE 7
(continued)

EVACUATION ZONES

ZONE NUMBER	ZONE BOUNDARIES	EVACUATION ROUTES	SHELTERS
P-28	NORTH: S.R. 60 EAST: Seaboard Coastline right-of-way, Lake Buffum Rd. SOUTH: Lake Buffum Rd, Sinkhole Rd, S.R. 640 WEST: S.R. 559	S.R. 60, S.R. 655A, Alturas-Babson Park cut-off Rd.	Alturas Elementary School
P-29	NORTH: Peace Creek Drainage Canal, U.S. 27, Old Mammouth Grove Rd., Camp Mack Rd. EAST: Osceola County Line SOUTH: River Ranch Blvd, S.R. 60/S.R. 630, Lake Walk-in-the-water Rd., Lake Buffum Rd. and a line connecting Lake Buffum Rd, the south town limit of Hillcrest Heights, Alico Rd, and Lake Walk-in-the-water Rd.	S.R. 60, U.S. 27, S.R. 17A, S.R. 17B, U.S. 27A	Lake Wales Sr. High School Lake Wales Fr. High School Hillcrest Elementary School Janie Howard Wilson Elementary Polk Ave. Elementary Roosevelt Elementary Spook Hill Elementary Lake Wales Adult School
P-30	NORTH: S.R. 640, Sinkhole Rd. EAST: A line from Grassy Lake south to Hardee County line. SOUTH: Hardee County line WEST: District Line Rd./S.R. 555	U.S. 17, S.R. 630, District Line Rd, S.R. 555, Lake Hendry Rd, Lake Buffum Rd.	Ft. Meade Jr.-Sr. High School Riverside Elementary School Ft. Meade Middle School

TABLE 7
(continued)

EVACUATION ZONES

ZONE NUMBER	ZONE BOUNDARIES	EVACUATION ROUTES	SHELTERS
P-24	NORTH: S.R. 60 (Main St.) EAST: Broadway Ave, Stuart Ave. SOUTH: Six Mile Creek/Cedar Branch WEST: S.R. 555	Main St, Broadway Ave, Stuart St, Clower St, S.R. 555, Kissingen Ave.	Bartow Civic Center Bartow High School Bartow Jr. High School
P-25	NORTH: North city limit of Bartow, U.S. 17, 91 Mine Rd, S.R. 60 EAST: S.R. 655A SOUTH: Mann Rd and a line extending from Mann Rd. to S.R. 559 WEST: Kissingen Ave, Stuart St., Broadway Ave.	S.R. 60 By-Pass, Main St., U.S. 17, Kissingen Ave.	Bartow Elementary School Bartow Jr. High School Bartow Sr. High School
P-26	NORTH: S.R. 555, S.R. 559, Rifle Range Rd, Eagle Lake Loop Rd/S.R. 540A EAST: Seaboard Coastline R.R. right-of-way SOUTH: S.R. 60 WEST: 91 Mine Rd	S.R. 559, S.R. 655, S.R. 60, Old Bartow-Lake Wales Rd.	Eagle Lake Elementary School
P-27	NORTH: Cedar Branch/Sixmile Creek, U.S. 17, Mann Rd. and a line extending from Mann Rd. to S.R. 559 EAST: S.R. 559 SOUTH: S.R. 640 WEST: S.R. 555	Same as Boundaries	Bartow Civic Center Bartow Jr. High School Bartow Sr. High School

TABLE 7
(continued)

EVACUATION ZONES

ZONE NUMBER	ZONE BOUNDARIES	EVACUATION ROUTES	SHELTERS
P-28	NORTH: S.R. 60 EAST: Seaboard Coastline right-of-way, Lake Buffum Rd. SOUTH: Lake Buffum Rd, Sinkhole Rd, S.R. 640 WEST: S.R. 559	S.R. 60, S.R. 655A, Alturas-Babson Park cut-off Rd.	Alturas Elementary School
P-29	NORTH: Peace Creek Drainage Canal, U.S. 27, Old Mammouth Grove Rd., Camp Mack Rd. EAST: Osceola County Line SOUTH: River Ranch Blvd, S.R. 60/S.R. 630, Lake Walk-in-the-water Rd., Lake Buffum Rd. and a line connecting Lake Buffum Rd, the south town limit of Hillcrest Heights, Alico Rd, and Lake Walk-in-the-water Rd. WEST: Lake Buffum-West Lake Wales Rd/ Seaboard C.L.R.R.	S.R. 60, U.S. 27, S.R. 17A, S.R. 17B, U.S. 27A	Lake Wales Sr. High School Lake Wales Sr. High School Hillcrest Elementary School Janie Howard Wilson Elementary Polk Ave. Elementary Roosevelt Elementary Spook Hill Elementary Lake Wales Adult School
P-30	NORTH: S.R. 640, Sinkhole Rd. EAST: A line from Grassy Lake south to Hardee County line. SOUTH: Hardee County line WEST: District Line Rd./S.R. 555	U.S. 17, S.R. 630, District Line Rd, S.R. 555, Lake Hendry Rd, Lake Buffum Rd.	Ft. Meade Jr.-Sr. High School Riverside Elementary School Ft. Meade Middle School

will be sent to the next closest shelter. Counties which have inadequate space for their own residents will send local evacuees who have not been sheltered to the closest county with adequate shelter space.

Intra-regional evacuation should be facilitated by the following factors, based on the findings of the behavioral survey: 1) Nearly all inland residents will seek evacuation advice from National Weather Service reports broadcast on radio or T.V. Other than the National Weather Service, a majority of residents (ranging from 56% in DeSoto County to 72% in Hardee County) will seek advice from local government or law enforcement officials; 2) Most households will be ready to evacuate quickly and when ordered to do so, even if the weather is not threatening; 3) Most households would evacuate in one vehicle. On the other hand, intra-regional evacuation could be hindered by the following factors: 1) Over 40% of all mobile home households are age 65 or older (in Highlands County nearly 79% of mobile home households have someone 65 years old or older); 2) The median number of years in the Region for mobile home residents is 15 years or less. (Hurricane Donna was the last major hurricane to strike the Region, in 1960. Thus, the great majority of mobile home residents moved to the area following that storm.) 3) Although most residents are familiar with the road network in their area, most do not know where the nearest public shelter is located.

Intra-regional evacuation will be facilitated by at least one law enforcement officer at critical intersections on the local road network as well as at the junctures of regional and local road networks. These traffic control points will also consist of roadblocks which allow for passage of local traffic. Details as to how officers and roadblocks will be deployed should be worked out through meetings of law enforcement and Civil Defense officials through the Inland Shelter Advisory Committee.

Local officials should identify sites of potential localized flooding and prepare alternate evacuation routes so that flooded areas can be avoided. Local officials should also prepare for the prompt removal of accidents and disabled vehicles.

Concern was raised in the discussion of inter-regional evacuation (above) that the onset of sustained gale-force winds and flooding may occur prior to completion of inter-regional evacuation. Conversely, at the local level, people may be told to evacuate even though a hurricane may not present an immediate inland threat. In such an event, school boards may not make their schools available promptly, and other local officials may be slow in recognizing the urgency of developments on the coast or elsewhere inland. While all evidence indicates that local officials will act expeditiously, appropriate state officials should be prepared to facilitate emergency inter and intra-regional operations.

VII. SHELTER CHECKPOINTS

The shelter checkpoint issue was the most difficult to resolve in this study. Instructions from the Bureau of Disaster Preparedness were to "specify the location of checkpoint sites at strategic points that would serve coastal evacuees. The purpose of these centers will be to provide

supporting services and guidance to evacuees seeking arrangements for shelter; to provide a control mechanism for officials keeping track of (evacuees);" and to distribute maps and directions to shelters. The Bureau asserts that communication with evacuees who need directions is essential, as is the need to determine who is headed for a friend or relative's house or hotel as opposed to those seeking public shelter.

After several discussions and meetings with Bureau staff and Civil Defense officials, the locations of shelter checkpoint sites or reception areas were established in Polk, Hardee, Highlands and Okeechobee Counties. Sites in Polk, Okeechobee and Highlands Counties are based on sites identified in those counties' Nuclear Civil Protection Plans. DeSoto County, because of its location (the primary point of ingress of Southwest Florida evacuees) and because of its severely limited shelter capacity, will not establish checkpoint sites. Shelters in DeSoto County will reach capacity within a short period of time after the initiation of a coastal evacuation. Thus, shelter checkpoints in DeSoto will be superfluous. After absorbing as many evacuees as possible, directing evacuees through DeSoto to other counties will be the major concern of DeSoto County officials.

Related to this point is the assertion by Bureau staff that the primary purpose of checkpoints is for local officials to communicate with those evacuees who do not know where to go and direct them to public shelters. Moreover, once shelters reach capacity, checkpoints may be dismantled and evacuees still on the regional road network will be directed to areas where shelter space is available. Thus, as shelters to which certain checkpoints have been directing evacuees reach capacity, those checkpoints may be closed. It is assumed, then, that checkpoints in counties with limited shelter capacity (relative to other counties in the Region), such as Hardee and Okeechobee, will be open for a relatively short period of time.

The following are the locations of shelter checkpoints and reception areas in the Central Florida Region.

DeSoto	. None
Hardee	. Wauchula State Bank - Southeast corner of U.S. 17 and Main Street, Wauchula
	. Ernest Plaza - Northeast corner of U.S. 17 and Main Street, Wauchula
	. Wauchula State Bank - U.S. 17, Bowling Green
Highlands	. Venus Post Office - Junction of S.R. 731 and U.S. 27
	. St. Regis Co. Warehouse - S.R. 70 west of U.S. 27
	. Avon Park Airport

Okeechobee	. Rodeo Arena (Reception Center) - North of Okeechobee City limit on U.S. 441
Polk	. Lake Wales Plaza - Junction of S.R. 60 and U.S. 27
	. Lake Wales Shopping Center - S.E. corner of Junction of S.R. 60 and U.S. 27
	. Golden Gate Shopping Center - S.E. corner of Junction of U.S. 60 By-pass and U.S. 98, Bartow
	. Bartow Mall (Reception Center, if necessary) - N.E. corner of Junction of S.R. 60 By-pass and U.S. 98, Bartow
	. Mulberry Restaurant (Scenario 12 only) - S.R. 60, east of S.R. 37, Mulberry
	. Lake Miriam Square Shopping Center (Scenarios 3 and 5) - Junction of S.R. 37 and Lake Miriam Drive, Lakeland
	. 40 Acre Truck Stop (if necessary) - Junction Memorial Boulevard and Wabash Avenue, Lakeland

Shelter checkpoint sites for Hardee and Okeechobee Counties are mapped in Figures 8,9, and 10 respectively. Checkpoint sites in Highlands County are mapped in Figures 11 (a) and 11 (b). Checkpoint sites in Polk County are mapped in Figures 12 (a) and 12 (b).

To augment the function of checkpoint sites or reception areas, local officials may want to select specific gas stations along major evacuation routes to be supplied with county or regional evacuation and/or shelter maps (cost of reproduction to be incurred by the county or combination of counties). The availability of these maps should be noted by the gas station on a prominent sign.

VIII. COORDINATION

The first and perhaps the most important accomplishment of this study was the formation of the Central Florida Inland Shelter Advisory Committee. This committee's membership includes not only representatives of emergency response agencies, but representatives of hospitals, planning agencies, and the news media. (The Advisory Committee membership as of October, 1982 is listed in Appendix G.) This rather diverse membership illustrates multi-agency and mulit-county concern with the impact a major hurricane will have on the five county Central Florida Region. This advisory committee is the first of its kind in the Central Florida Region. For the first time, emergency response officials and other interested parties have had the opportunity to meet with their counterparts in neighboring cities and counties to discuss the implications of a major hurricane striking Central Florida. At the outset, the Inland Shelter Advisory Committee elected to divide itself into five county-based subcommittees for the purpose of

guiding and assisting CFRPC staff in completing this plan. The few full-committee meetings that were held were mainly informational meetings at which CFRPC staff presented individual "work products" or progress reports to the members. Working sessions were held on an informal basis at the subcommittee level in each county. Other informal meetings between CFRPC staff and key subcommittee members were also held during the study period. The main reason for holding infrequent and informal meetings was the belief of members that staff would risk losing members' interest if frequent, formal, and "uneventful" meetings were scheduled. A high level of interest was maintained throughout the study period, yet CFRPC staff feels that more frequent meetings should be scheduled during the upcoming study period which will focus on hurricanes in the Atlantic Ocean. Staff feels that at the risk of losing some members's interst, the full membership's understanding of the study process and the information gathered during the study can be improved. Staff also believes the committee should be perpetuated beyond these two study periods. As was discussed earlier in this plan, the Inland Shelter Advisory Committee is the logical vehicle to maintain the multi-county continuity, coordination and communication necessary in hurricane planning. By holding regular meetings, the committee members will become more familiar with each other, and thus facilitate future coordination of emergency response planning.

IX. RECOMMENDATIONS

One purpose of intra and inter-regional advisory committees on this project was to assist regional planning council staff by offering expert opinions and suggestions on evacuation and sheltering. The following are a few of the suggestions which the CFRPC staff believes should be pursued and implemented.

Regarding inter-regional evacuation, two significant proposals have been advanced by members of the East Central Florida Technical Advisory Subcommittee. The first proposal is for "predesignation" of shelters for coastal evacuees. This would entail pre-assignment of coastal evacuation zones to certain inland reception centers. CFRPC staff believes that with detailed and extensive discussions between coastal and inland regions, predesignation may be a workable concept. On a related issue, an East Central Florida subcommittee proposed that the State provide a network of hurricane shelter signs based on "Emergency Snow Street" signs in many northern states. (The "Snow Street" signs are typically posted on major city streets indicating that parking bans are in effect following a declaration of a snow emergency.) CFRPC staff endorses this idea as a way to lessen the burden on traffic control points and checkpoint sites. It is recommended that the State erect a network of signs on inter and intra-regional roads which indicate directions to shelters, and on major local roads to ban parking during a hurricane emergency.

A less expensive system of signs may also be developed whereby coastal evacuees could communicate their needs to traffic control officers. As radio or television announcements inform coastal and inland residents to evacuate and which amenities they should take with them, the announcer may

instruct evacuees to state their needs or destinations on simply worded signs to be displayed on their vehicle's dashboard (e.g., "Need Shelter", or "To Friend's House", or "Need Directions"). Traffic control officers may also be provided with simple signs such as "To Shelter", "Local Traffic Only", or "Shelters Full". CFRPC staff believes such a system is at least as workable as other routing or signage systems, and would also lessen the burden on traffic control officers and information centers.

On the local level, it has been noted that the Lakeland Police Department intends to designate one city shelter as the place where dependents of the L.P.D. who need to evacuate are to be taken. This idea was subsequently endorsed by each Central Florida Advisory Subcommittee as a way to allay officer's concerns for the safety of their families. County law enforcement, Civil Defense and Red Cross officials are urged to incorporate this suggestion into their local plans. It should be noted that because of the potential shortage of shelter space, the only families which should be evacuated are those whose homes will be vulnerable to damage in a hurricane.

Finally, it has been suggested that detailed hurricane information (i.e., shelter locations, etc.) be incorporated into local telephone books. This suggestion, advanced by members of both East Central and Central Florida Advisory Committees is worth pursuing and refining. Public information efforts are greatly needed in hurricane evacuation and shelter planning. The various news media should be involved to a greater extent in the planning processes. Recognizing the different needs of the media and local officials, input should be obtained from both parties as to the best form and content for press releases or public information presentations.

POCKET A

Figures

3, 4, 5

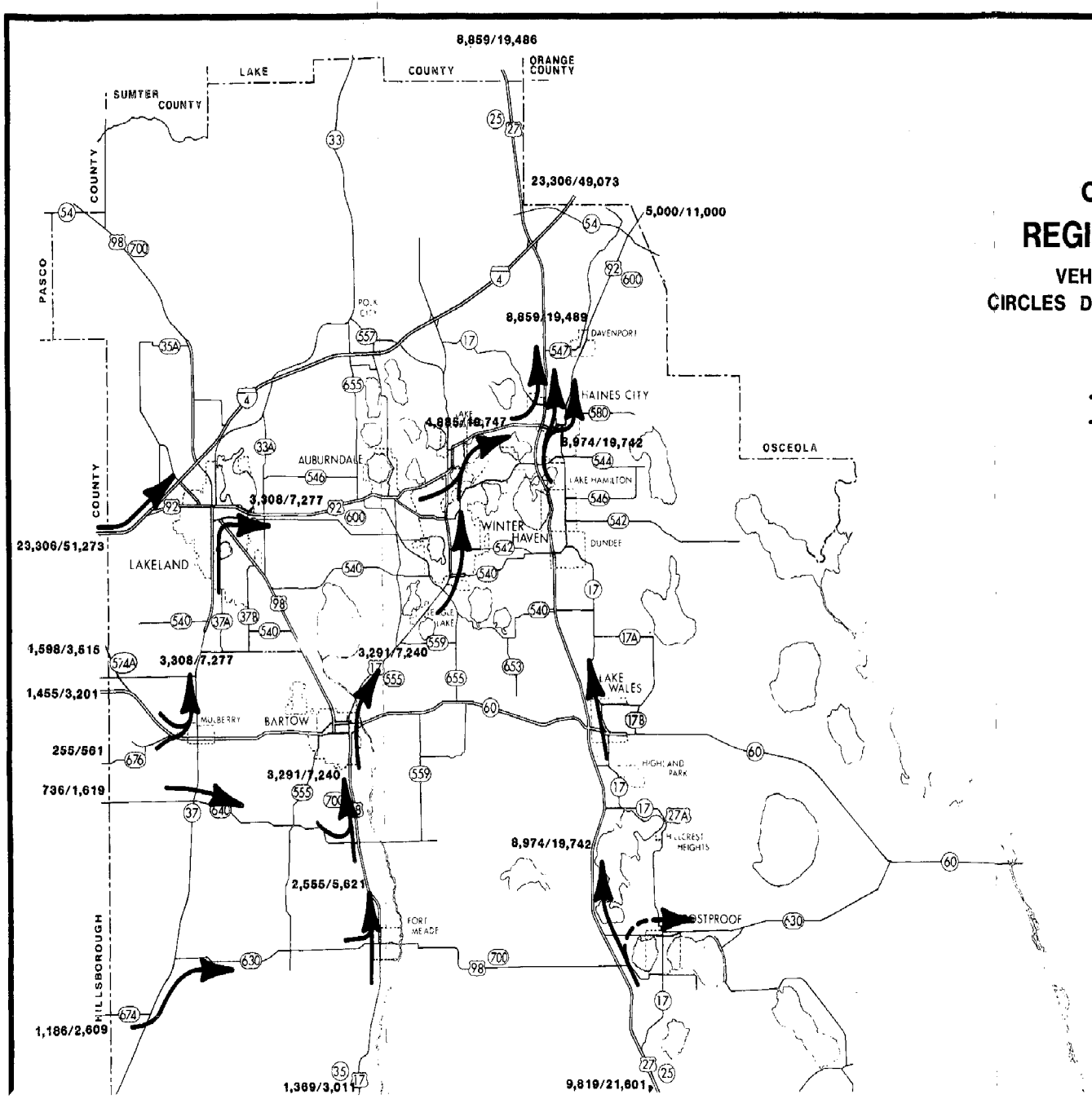


FIGURE 3

ROAD NETWORK

CENTRAL FLORIDA REGION

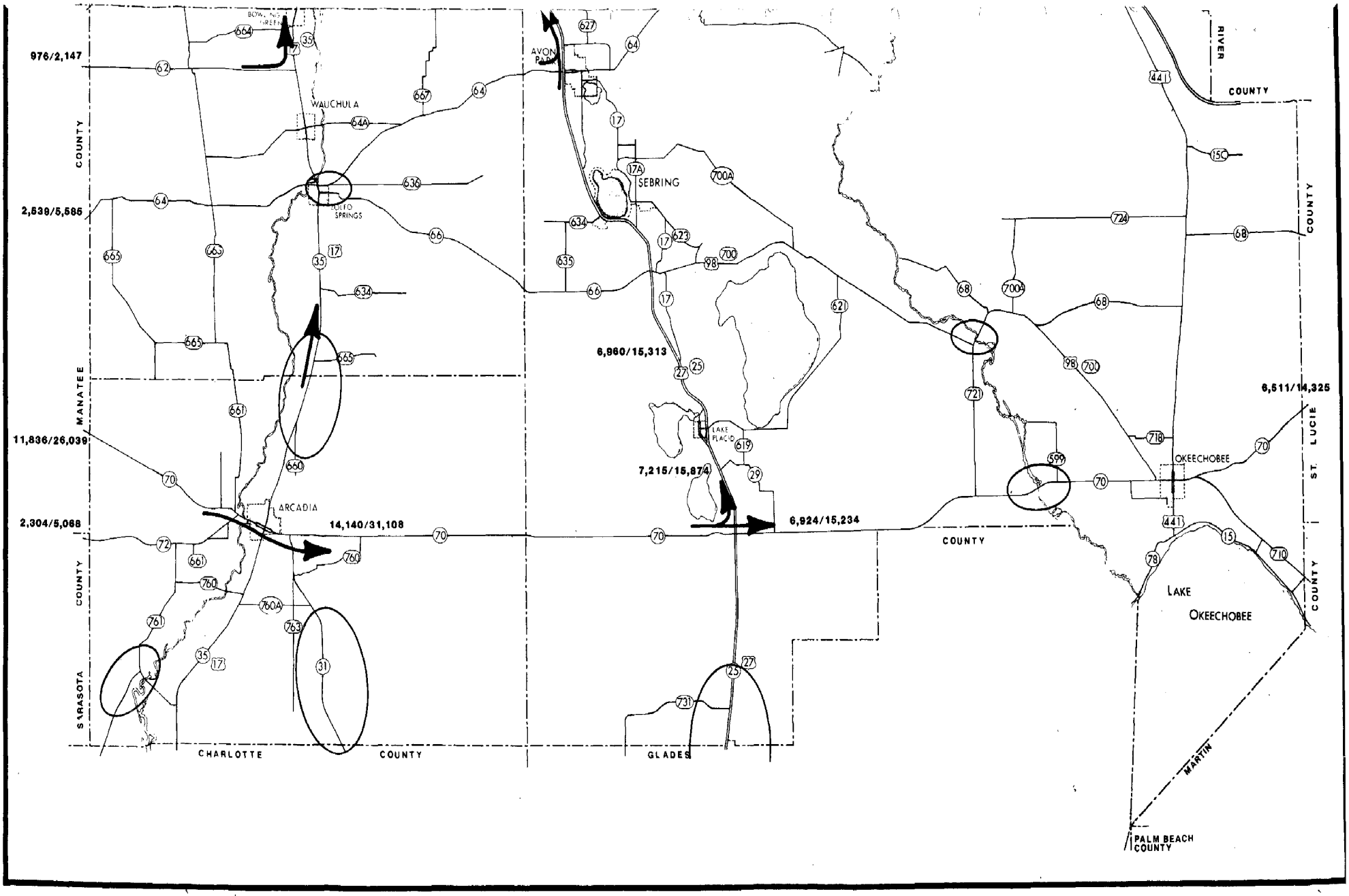
REGIONAL SCENARIO THREE

VEHICLES/PERSONS SEEKING SHELTER
CIRCLES DENOTE POTENTIAL ROADWAY INUNDATION

- - - - EVACUATION TO LOCAL SHELTER ONLY
——— INTER-REGIONAL EVACUATION

NORTH

PREPARED BY THE
CENTRAL FLORIDA REGIONAL PLANNING COUNCIL
JULY, 1981


976/2,147
2,539/5,585
11,836/26,039
2,304/5,068
14,140/31,108
6,960/15,313
7,215/15,874
6,924/15,234
6,511/14,325
WAUCHULA
ZOLFO SPRINGS
ARCADIA
AVON PARK
SEBRING
LAKE PLACID
OKEECHOBEE
LAKE OKEECHOBEE
MANATEE COUNTY
SARASOTA COUNTY
CHARLOTTE COUNTY
GLADES COUNTY
ST. LUCIE COUNTY
RIVER COUNTY
MARTIN COUNTY
PALM BEACH COUNTY

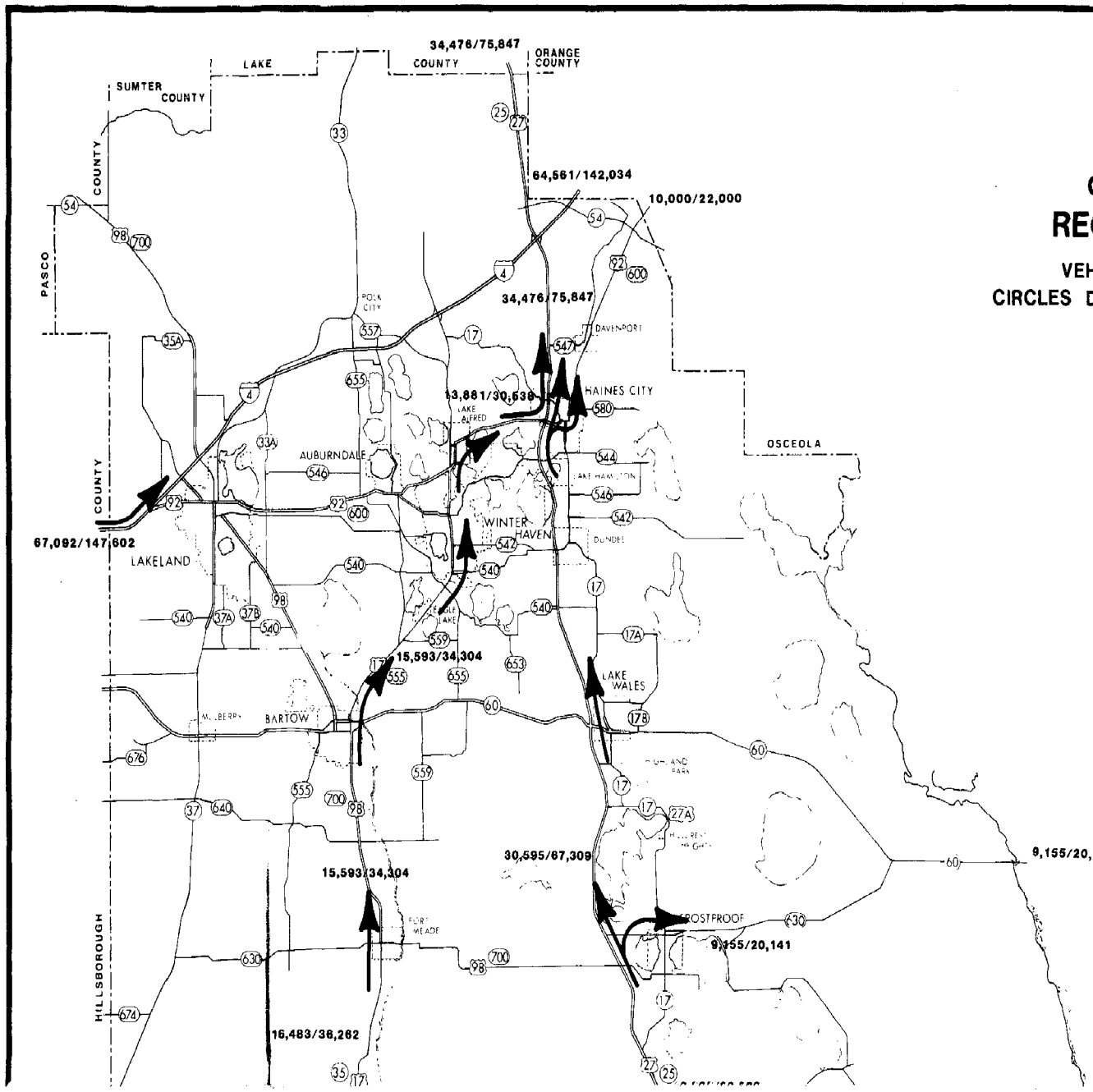


FIGURE 4

ROAD NETWORK

CENTRAL FLORIDA REGION

REGIONAL SCENARIO FIVE

VEHICLES/PERSONS SEEKING SHELTER
CIRCLES DENOTE POTENTIAL ROADWAY INUNDATION

---- EVACUATION TO LOCAL SHELTER ONLY
—— INTER-REGIONAL EVACUATION

NORTH

PREPARED BY THE
CENTRAL FLORIDA REGIONAL PLANNING COUNCIL
JULY, 1981

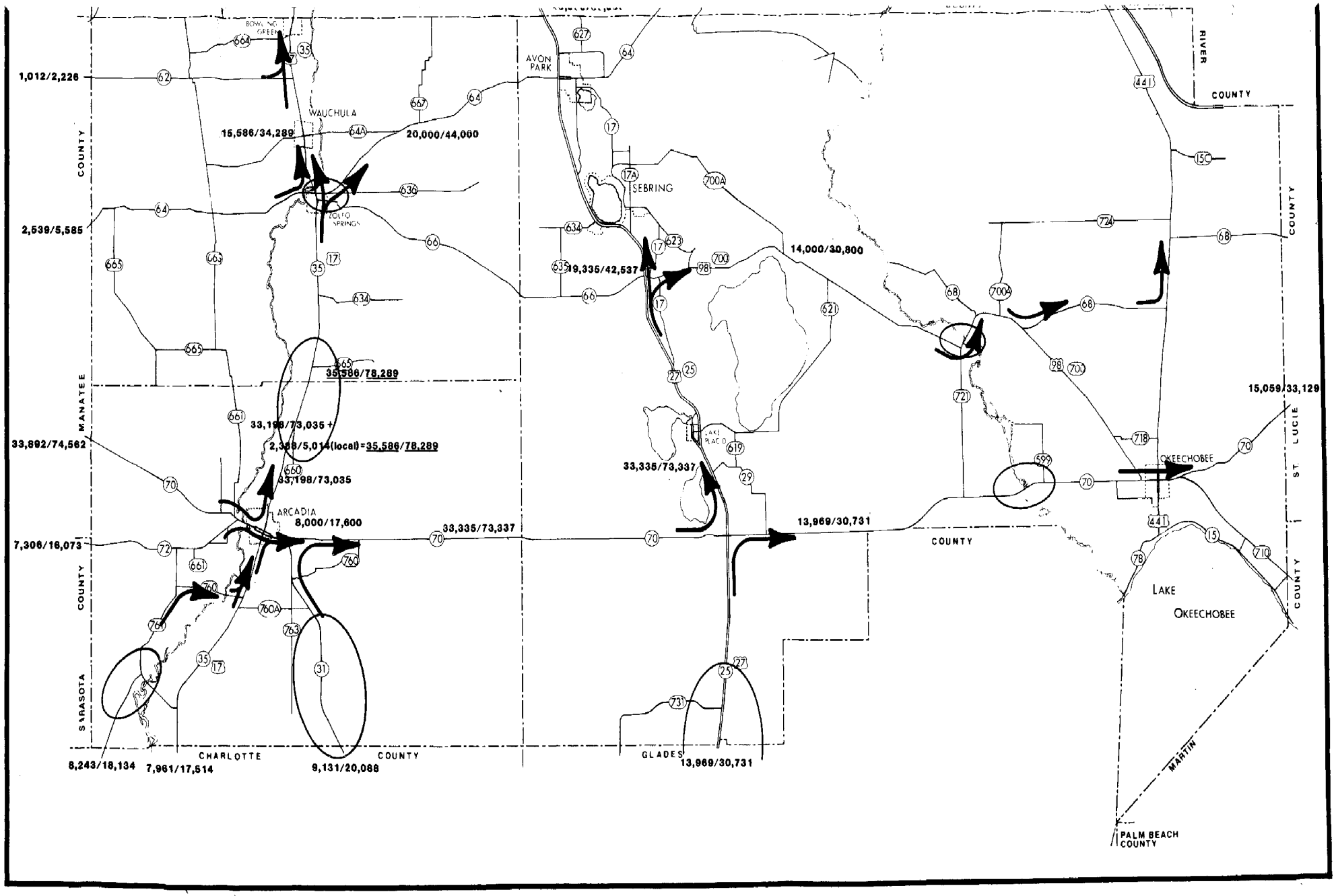

1,012/2,226
2,539/5,585
33,892/74,562
7,306/16,073
8,243/18,134
7,961/17,514
9,131/20,088
13,969/30,731
13,969/30,731
33,335/73,337
8,000/17,600
33,198/73,035
33,198/73,035 +
2,388/5,014(local)=35,586/78,289
35,586/78,289
15,586/34,289
20,000/44,000
19,335/42,537
14,000/30,800
33,335/73,337
15,059/33,129
COUNTY
MANATEE
SARASOTA
CHARLOTTE
COUNTY
GLADES
COUNTY
ST LUCIE
COUNTY
RIVER
COUNTY
MARTIN
PALM BEACH COUNTY
LAKE OKEECHOBEE
OKEECHOBEE
ARCADIA
WAUCHULA
SEBRING
AVON PARK
BOWLING GREEN
TOLTO SPRINGS
LAKE PLACID

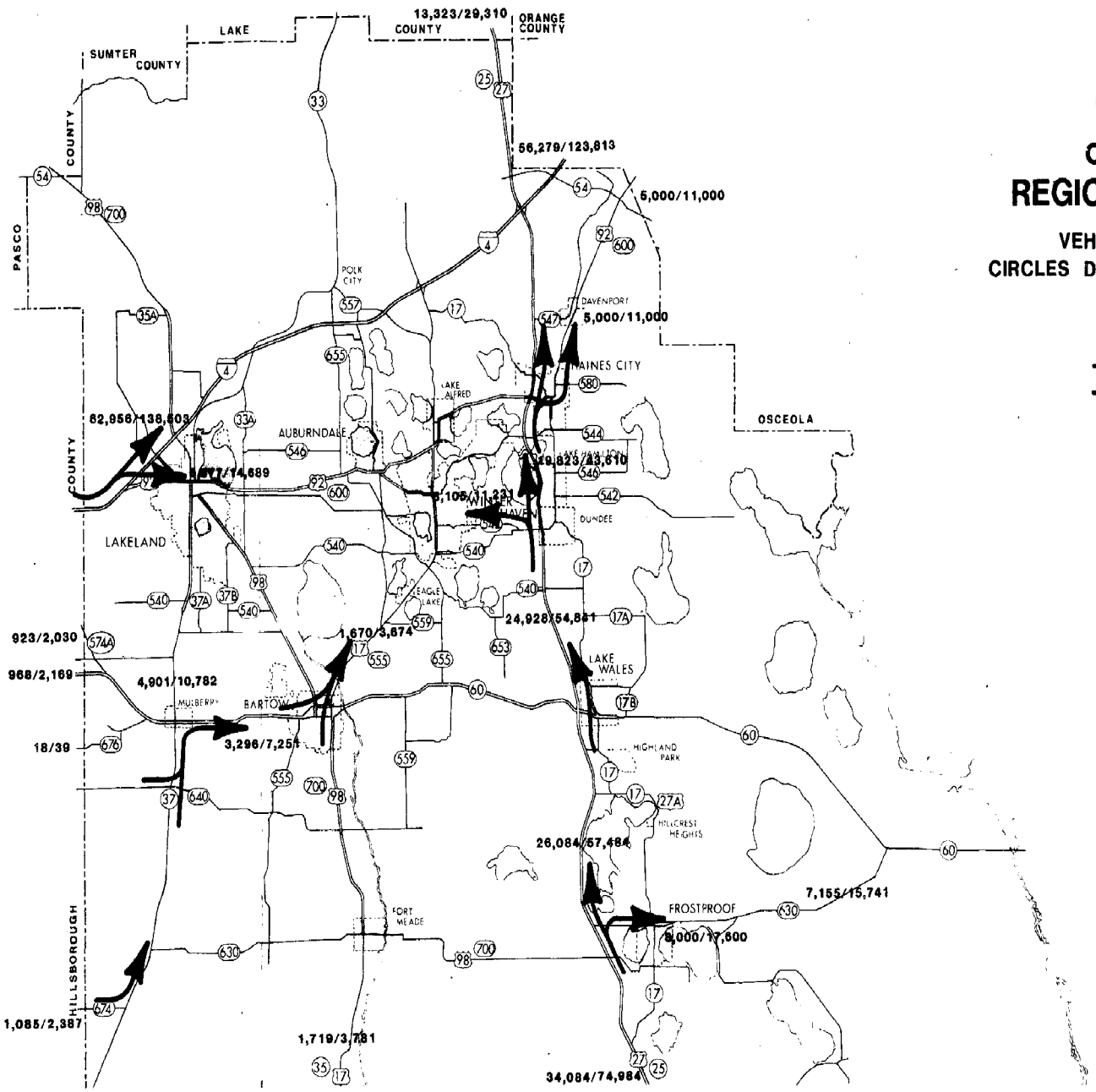
FIGURE 5

ROAD NETWORK

CENTRAL FLORIDA REGION

REGIONAL SCENARIO TWELVE

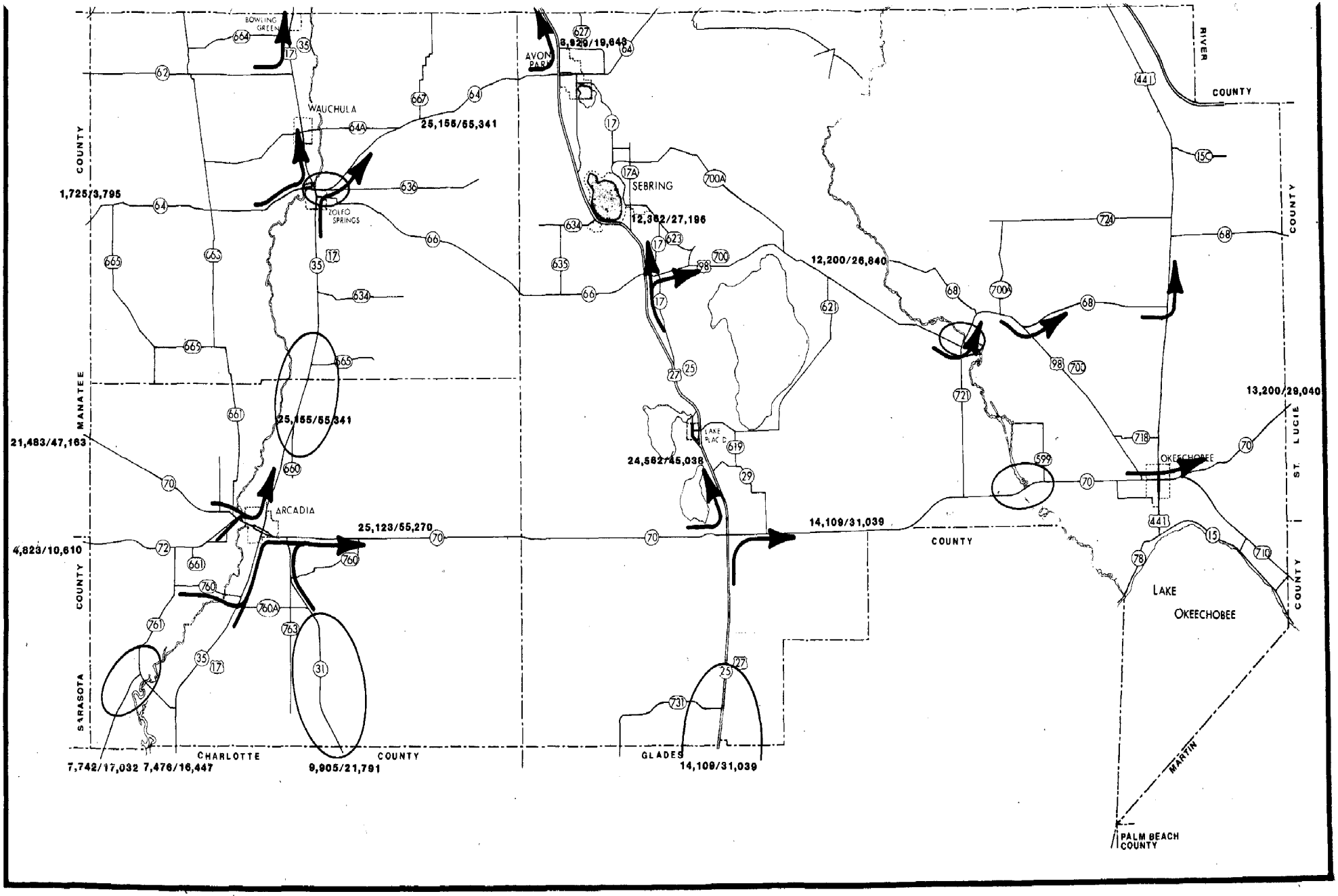
VEHICLES/PERSONS SEEKING SHELTER
CIRCLES DENOTE POTENTIAL ROADWAY INUNDATION



EVACUATION TO LOCAL SHELTER ONLY
INTER-REGIONAL EVACUATION

NORTH

PREPARED BY THE
CENTRAL FLORIDA REGIONAL PLANNING COUNCIL
JULY, 1981


BOWLING GREEN
WAUCHULA
FORT OW SPRINGS
AVON PARK
SEBRING
LAKE PLACID
ARCADIA
OKEECHOBEE
LAKE OKEECHOBEE
MANATEE COUNTY
SARASOTA COUNTY
CHARLOTTE COUNTY
GLADES COUNTY
MARTIN COUNTY
ST. LUCIE COUNTY
RIVER COUNTY
PALM BEACH COUNTY
1,725/3,795
21,483/47,163
4,823/10,610
7,742/17,032
7,476/16,447
9,905/21,791
25,155/55,341
25,155/55,341
25,123/55,270
8,920/19,643
12,352/27,196
24,582/45,038
12,200/26,840
14,109/31,039
14,109/31,039
13,200/29,040

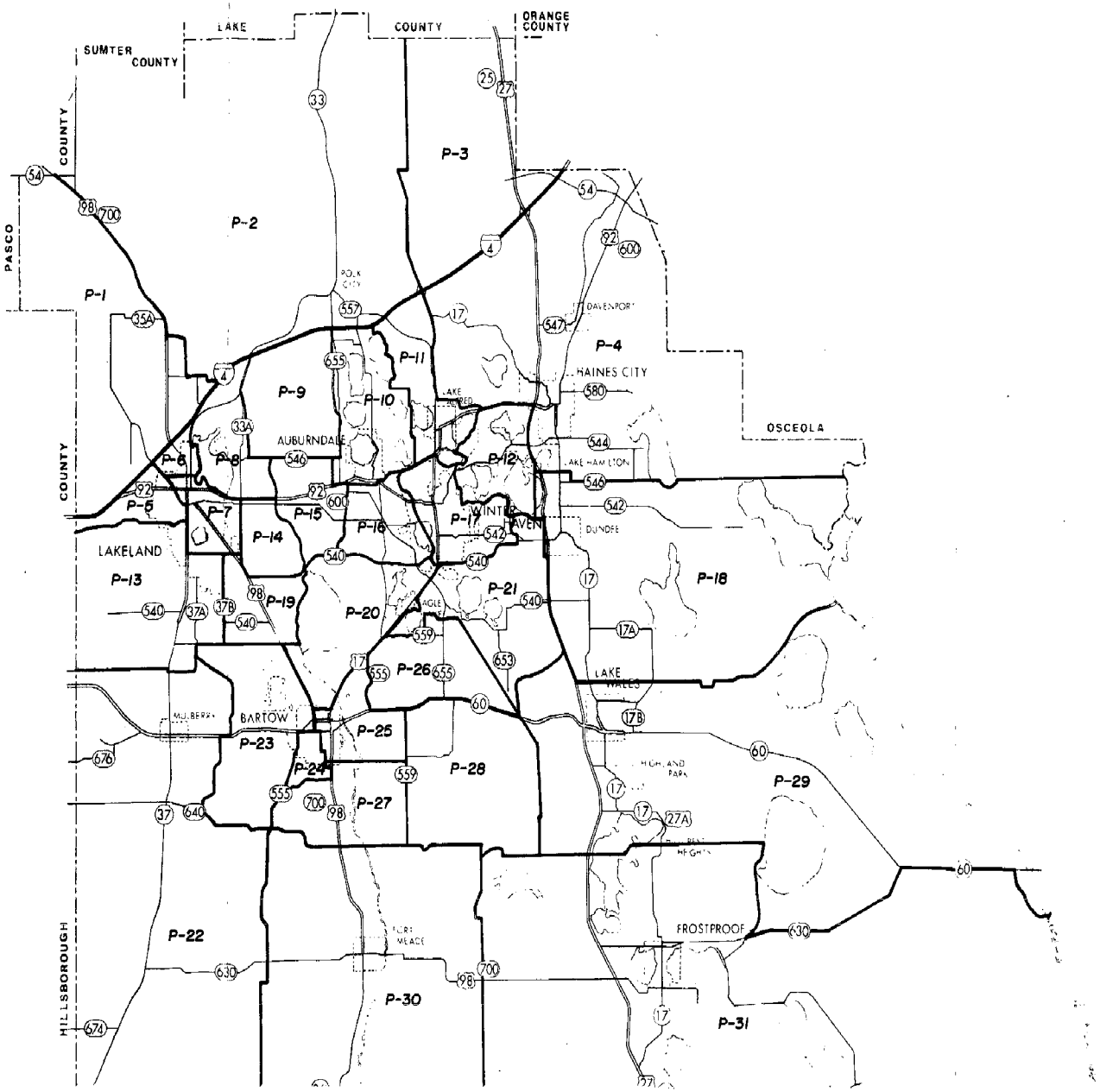
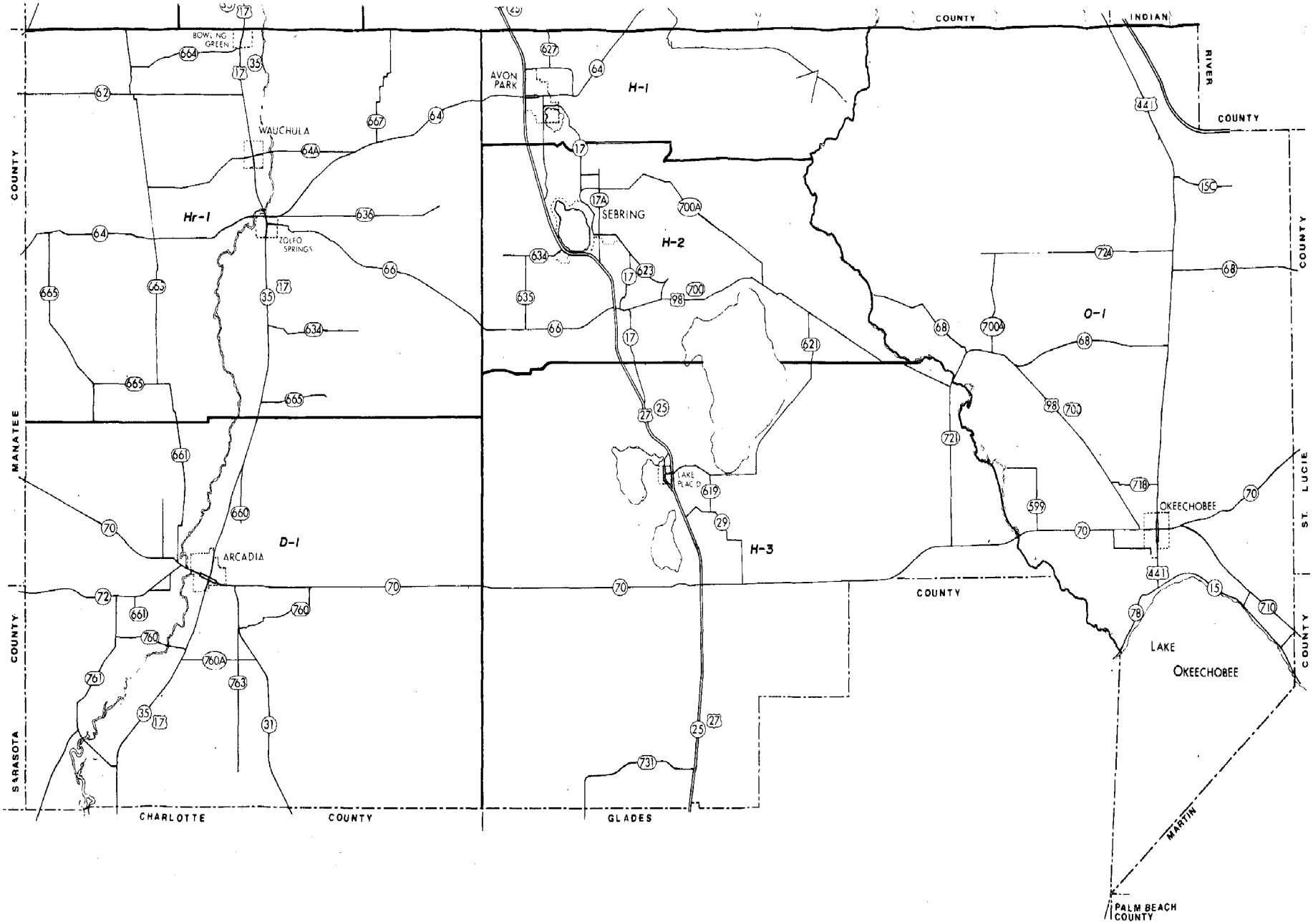


FIGURE 7

ROAD NETWORK
CENTRAL FLORIDA REGION
EVACUATION ZONES

NORTH

PREPARED BY THE
CENTRAL FLORIDA REGIONAL PLANNING COUNCIL
JULY, 1981


COUNTY
INDIAN
RIVER
COUNTY
BOWLING GREEN
WAUCHULA
ZOLFO SPRINGS
Hr-1
AVON PARK
H-1
SEBRING
H-2
LAKE PLACID
H-3
O-1
OKEECHOBEE
LAKE OKEECHOBEE
ARCADIA
D-1
COUNTY
MANATEE
COUNTY
SARASOTA
COUNTY
ST. LUCIE
COUNTY
CHARLOTTE
COUNTY
GLADES
COUNTY
MARTIN
PALM BEACH COUNTY

POCKET B

Figures

7, 8, 9, 10

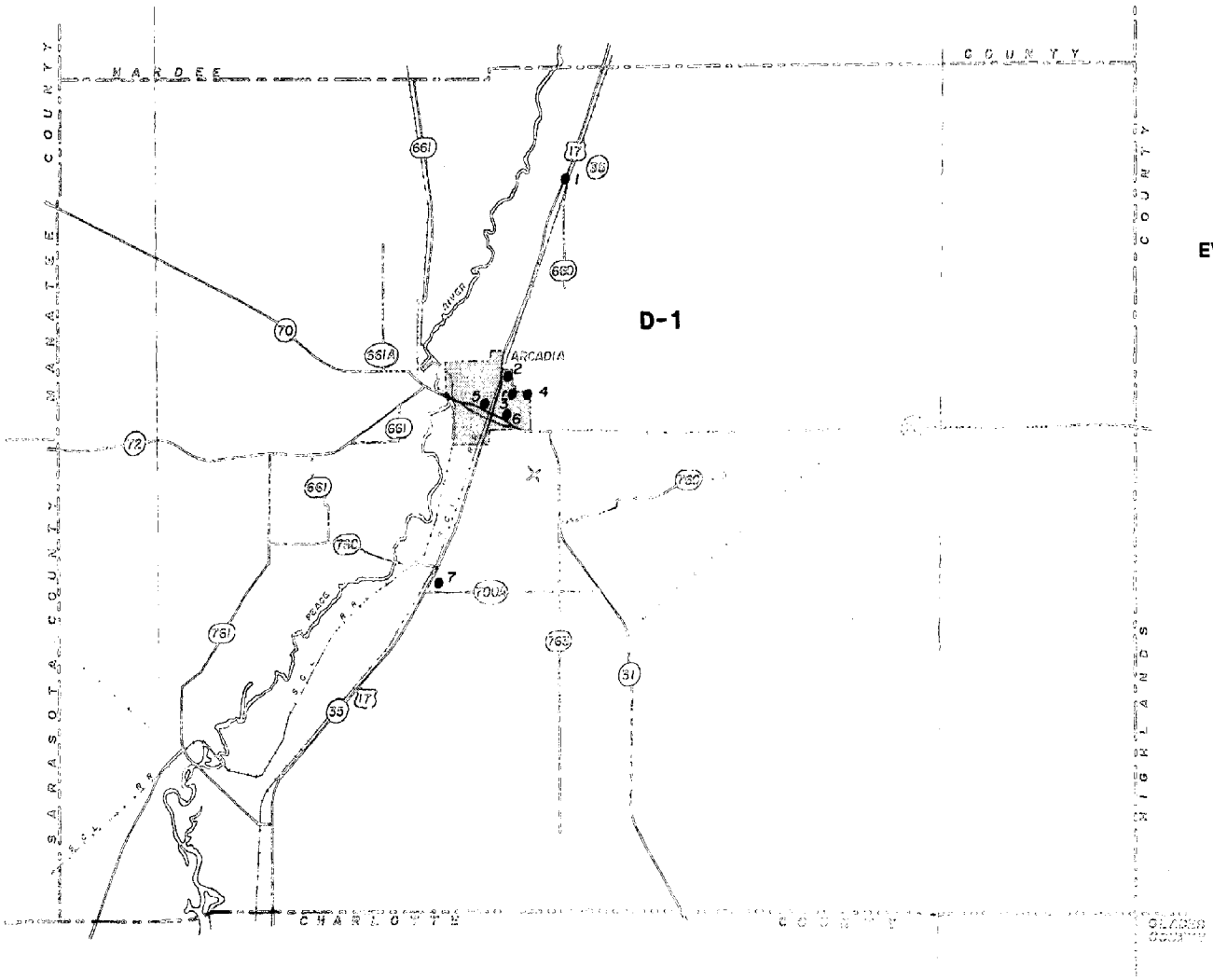


FIGURE 8

DESOTO COUNTY

EVACUATION ZONES/SHELTERS/CHECK POINTS

LEGEND

D-1 EVACUATION ZONES

● SHELTERS

★ * CHECK POINTS

prepared by the

CENTRAL FLORIDA REGIONAL
PLANNING COUNCIL

October 1982

N

SHELTERS

1 Old Brownville School
2 First Baptist Church
3 Desoto Middle School
4 Desoto County High
5 West Elementary School
6 Memorial Grammer School
7 Nocatee Elementary

* Desoto County has no check points.

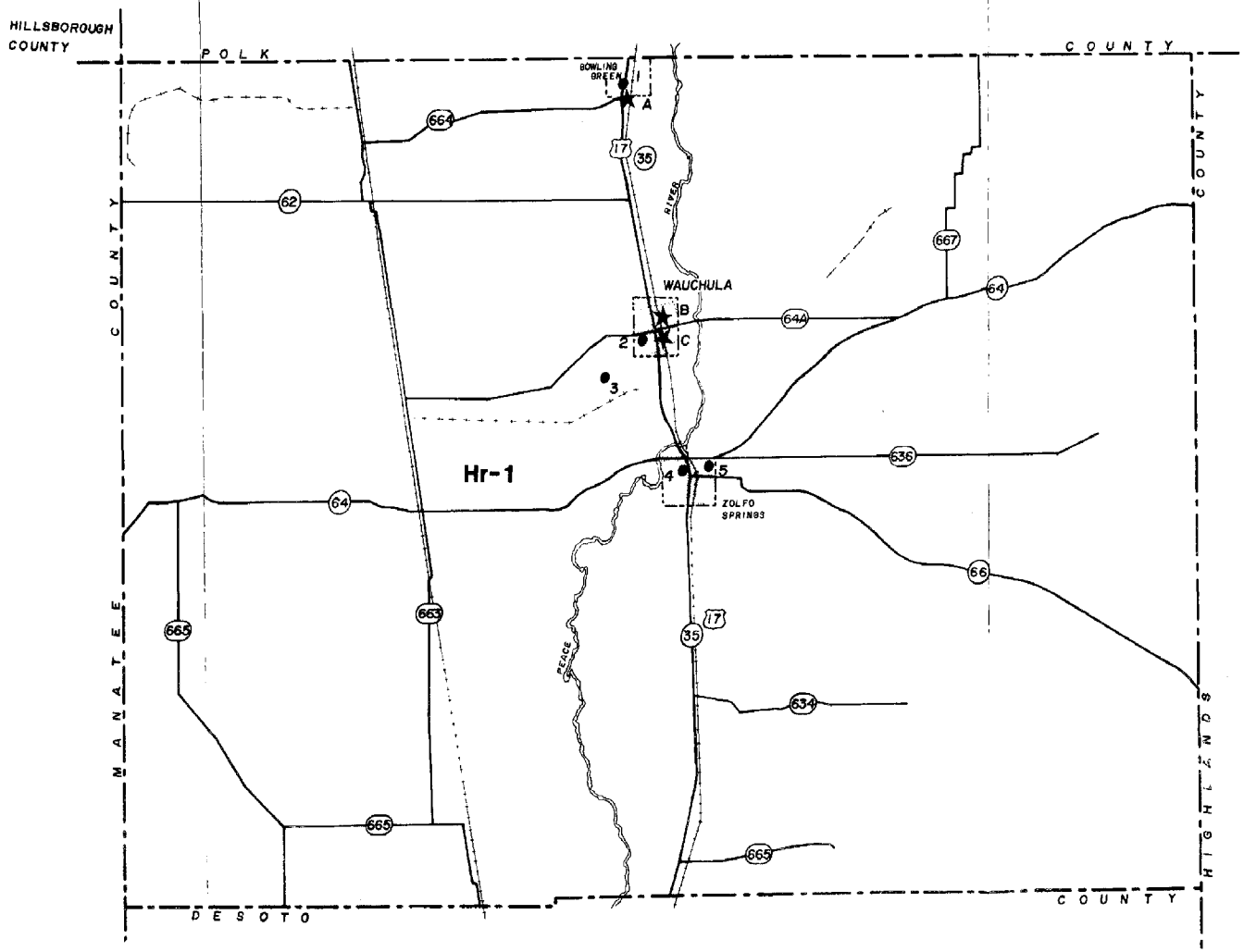


FIGURE 9

HARDEE COUNTY

EVACUATION ZONES/SHELTERS/CHECK POINTS

LEGEND

Hr-1	EVACUATION ZONES
●	SHELTERS
★	CHECK POINTS

prepared by the

CENTRAL FLORIDA REGIONAL PLANNING COUNCIL

October 1982

SHELTERS

1 Bowling Green Elementary
2 Hardee Junior High
3 Hardee Senior High
4 Zolfo Springs Civic Center
5 Zolfo Springs Elementary

CHECK POINTS

A Wauchula State Bank
B Ernest Plaza
C Wauchula State Bank

FIGURE 10

OKEECHOBEE COUNTY

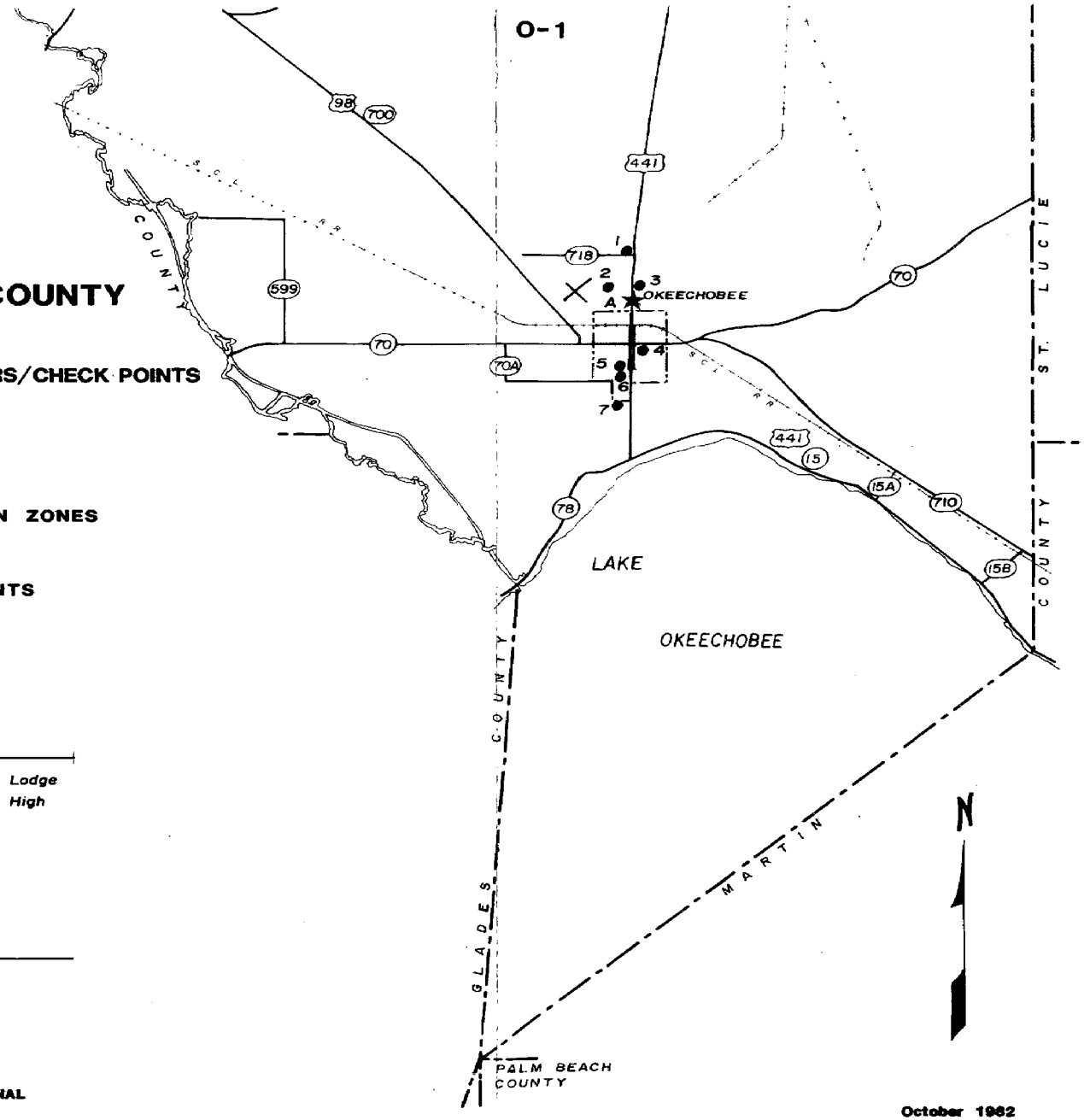
EVACUATION ZONES/SHELTERS/CHECK POINTS

LEGEND

O-1 EVACUATION ZONES

● SHELTERS

★ CHECK POINTS



SHELTERS

1	*Okeechobee Moose Lodge*
2	*Okeechobee Junior High*
3	*Okeechobee High*
4	*City Hall*
5	*Sixth Grade Center*
6	*North Elementary*
7	*South Elementary*

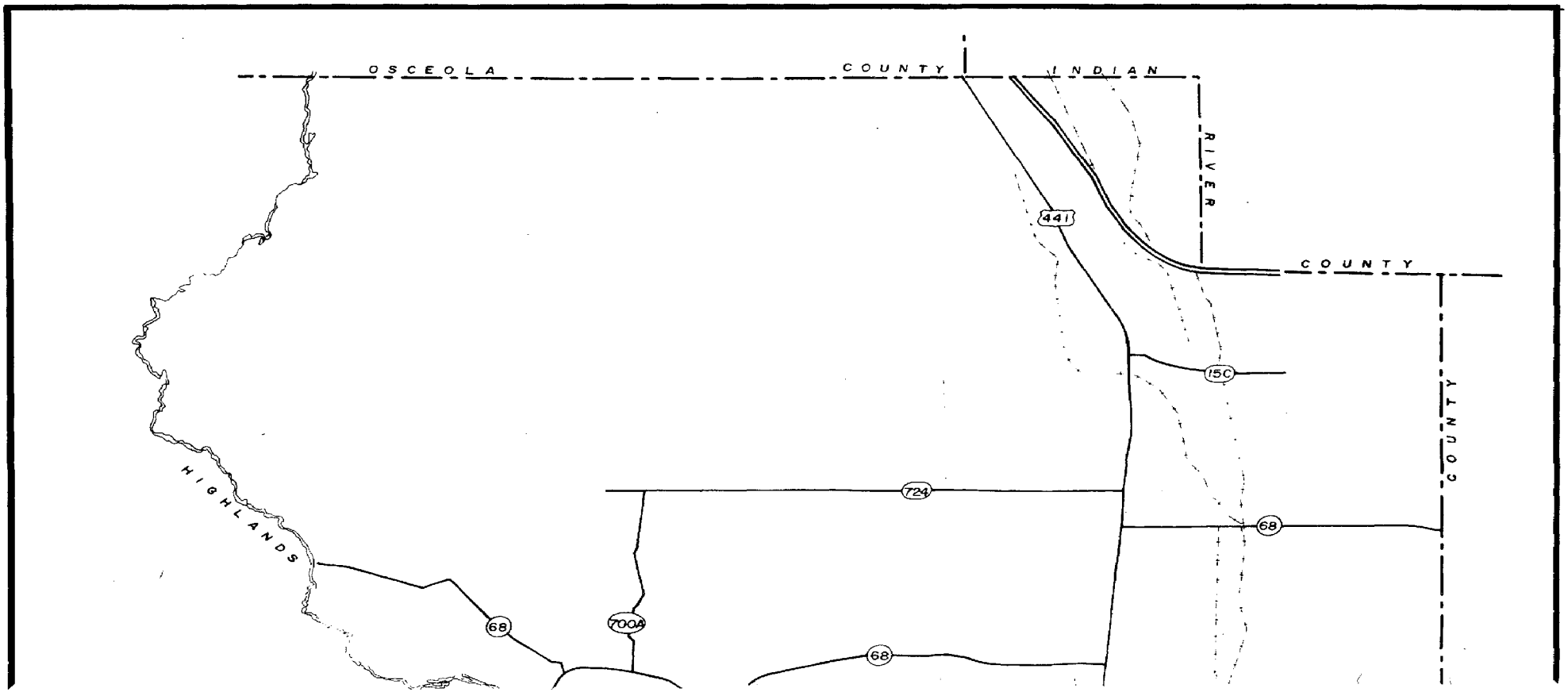
CHECK POINTS

A	*Rodeo Arena*

prepared by the

CENTRAL FLORIDA REGIONAL
PLANNING COUNCIL

October 1982


OSCEOLA
COUNTY
INDIAN
RIVER
COUNTY
COUNTY
HIGHLANDS
441
15C
724
68
68
68
700A

LEGEND
Figures 12 (a) - 12 (d)

POLK COUNTY SHELTERS

1. Kathleen Elementary School
2. Lake Gibson Jr. High School
3. Padgett Elementary
4.L Griffin Elementary
5.L North Lakeland Elementary
6.L Winston Elementary
7.L Kathleen Sr. High School
8.L John Cox Elementary
9.L Combee Elementary
10.L Seth McKeel Jr. High
11.L Jessee Keen Elementary
12.L Lakeland Sr. High
13.L Crystal Lake Jr. High
14.L Southwest Jr. High
15.L Cleveland Court Elementary
16.L Oscar Pope Elementary
17.L Carlton Palmore Elementary
18.L Polk Opportunity School
19.L Crystal Lake Elementary
20. Polk Vocational Technical
21. Lakeland Highlands Jr. High
22. Medulla Elementary
23. Scott Lake Elementary
24. Mulberry Elementary
25. Mulberry Sr. High
26. Highland City Elementary
27. James E. Stephens Elementary
28. Bartow Middle School
29. Bartow Sr. High
30. Bartow Jr. High
31. Union Academy
32. Polk City Elementary
33. Lena Vista Elementary
34. Auburndale Sr. High
35. Auburndale Jr. High
36. Walter Caldwell Elementary
37. Auburndale Central Elementary
38.W Lake Alfred Elementary
39.W Ridge Vocational Technical Cent
40.W Garner Elementary
41.W Jewett Elementary
42.W Northeast Jr. High
43.W Westwood Jr. High
44.W Inwood Elementary
45.W Elbert Elementary
46.W Denison Jr. High
47.W Winter Haven Sr. High
48.W Lake Shipp Elementary
49.W Snively Elementary
50. Garden Grove Elementary

L = Lakeland
W = Winter Haven

LEGEND

Figures 12 (a) - 12 (d)

POLK COUNTY SHELTERS
(continued)

51. Eagle Lake Elementary
52. Alturas Elementary
53. Fort Meade Jr./Sr. High
54. Lewis Elementary
55. Fort Meade Middle School
56. Davenport Elementary
57. Bethune Elementary
58. Eastside Elementary
59. Haines City Sr. High
60. Haines City Jr. High
61. Alta Vista Elementary
62. Janie Howard Wilson Elementary
63. Lake Wales High School
64. Roosevelt Elementary
65. Spook Hill Elementary
66. Polk Avenue Elementary
67. Hillcrest School
68. Lake Wales Jr. High
69. Babson Park Elementary
70. Frostproof Jr./Sr. High
71. Frostproof Elementary

POLK COUNTY CHECKPOINTS

A. 40 Acre Truck Stop (if necessary)
B. Lake Miriam Square Shopping Center (Scenarios 3 and 5)
C. Mulberry Restaurant (Scenario 12 only)
D. Golden Gate Shopping Center
E. Bartow Mall (Reception Center, if necessary)
F. Lake Wales Plaza
G. Lake Wales Shopping Center

POCKET C

Figures

11a, 11b, 12a, 12b, 12c, 12d

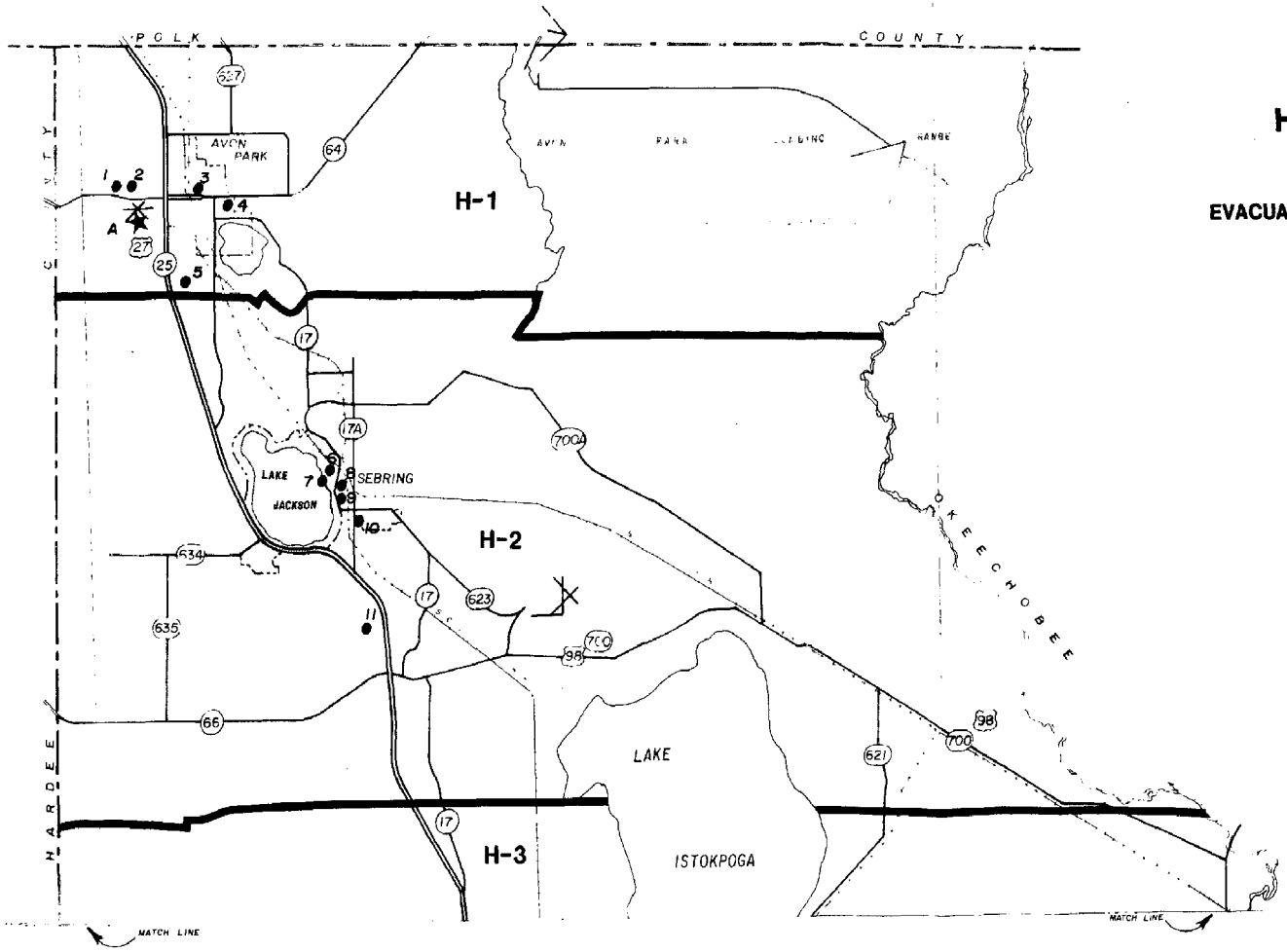


FIGURE 11a

HIGHLANDS COUNTY

NORTHERN PORTION

EVACUATION ZONES/SHELTERS/CHECK POINTS

LEGEND

H-1	EVACUATION ZONES
●	SHELTERS
★	CHECK POINTS

prepared by the

CENTRAL FLORIDA REGIONAL PLANNING COUNCIL

October 1982

SHELTERS

1 Missionary Church
2 Walker Memorial Jr. Academy
3 First Baptist Church
4 Avon Park High
5 South Florida College
6 Sebring Middle School
7 City Pier Youth Center
8 Courthouse
9 First Presbyterian Church
10 Fred Wild Elementary
11 Agriculture Center

CHECK POINTS

A Avon Park Airport

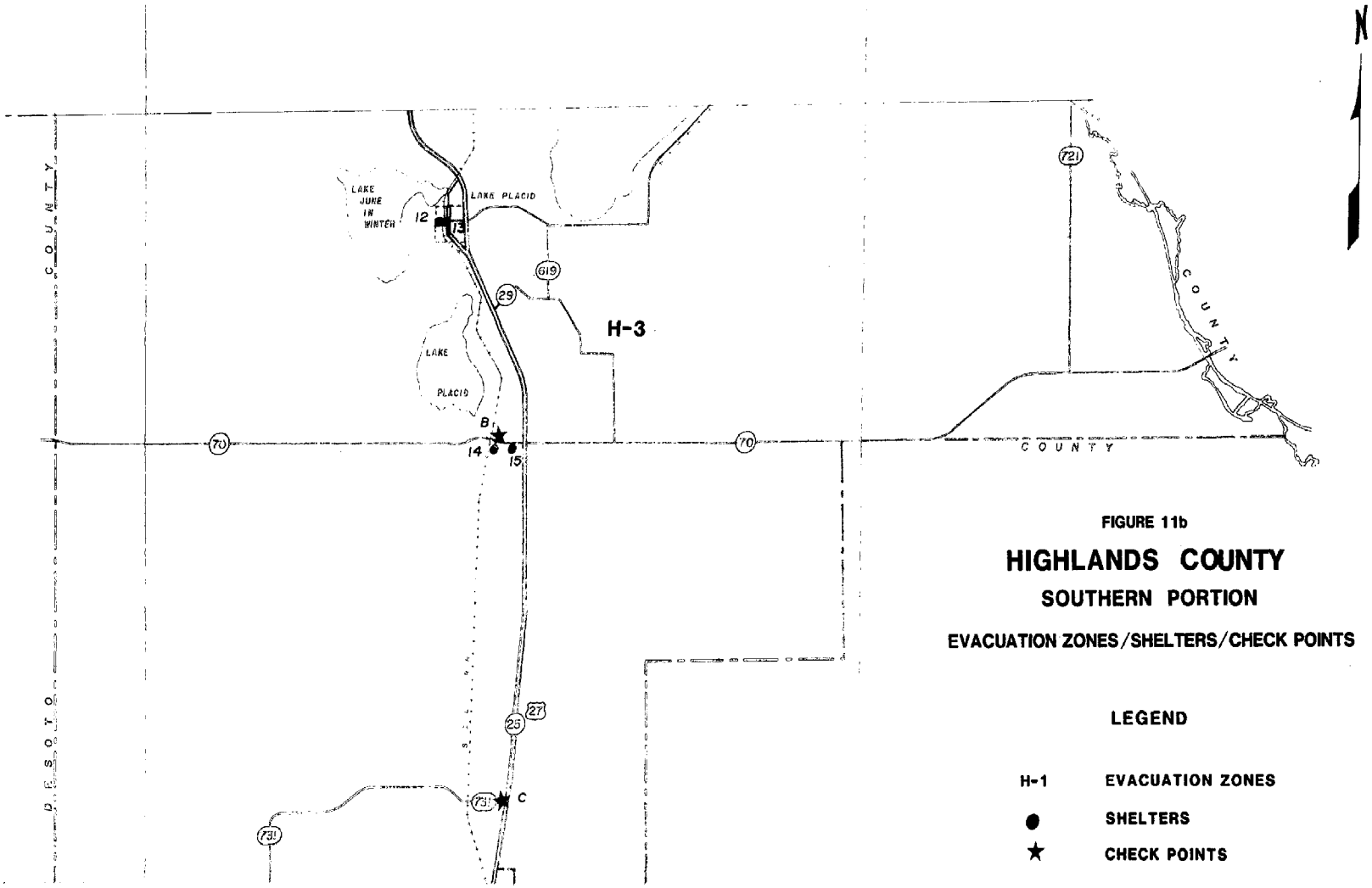


FIGURE 11b

HIGHLANDS COUNTY

SOUTHERN PORTION

EVACUATION ZONES/SHELTERS/CHECK POINTS

LEGEND

H-1	EVACUATION ZONES
●	SHELTERS
★	CHECK POINTS

G L A D E S

SHELTERS

12 Lake Placid High
13 Miller Warehouse
14 St. Regis Warehouse
15 Lake Placid Grove Warehouse

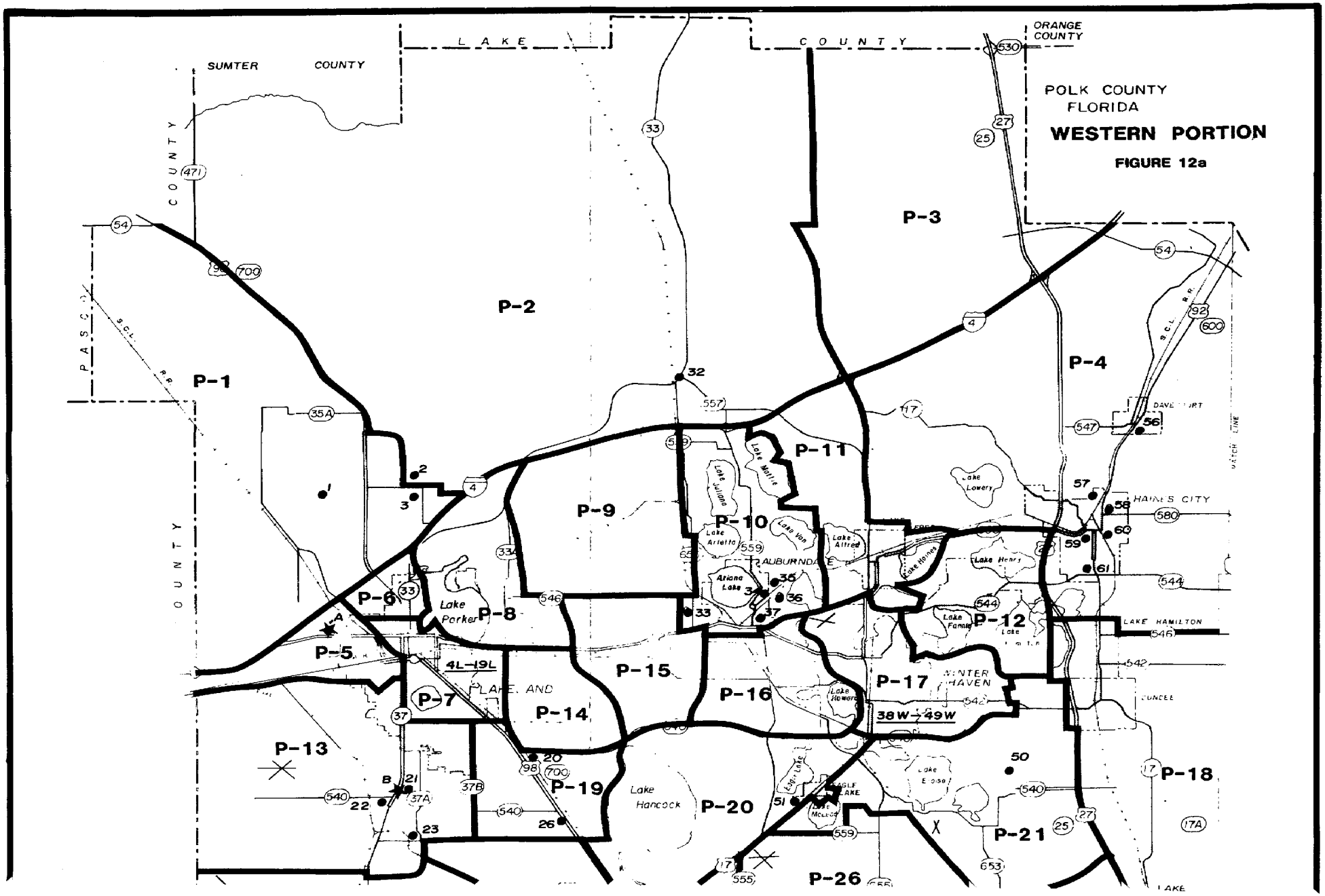
CHECK POINTS

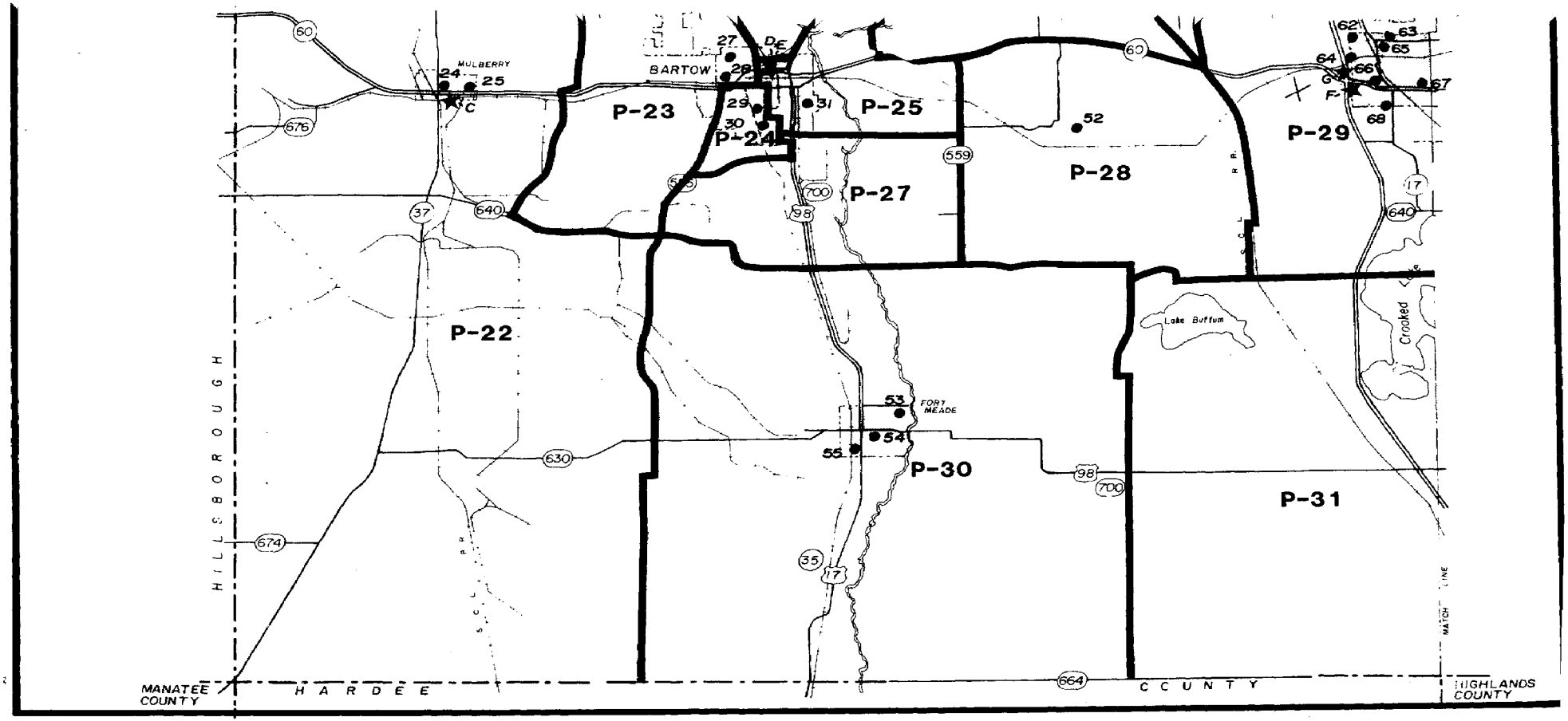
B St. Regis Warehouse
C Venus Post Office

prepared by the

CENTRAL FLORIDA REGIONAL
PLANNING COUNCIL

October 1982


POLK COUNTY
FLORIDA
WESTERN PORTION
FIGURE 12a
SUMTER COUNTY
LAKE COUNTY
ORANGE COUNTY
PASCO COUNTY
P-1
P-2
P-3
P-4
P-5
P-6
P-7
P-8
P-9
P-10
P-11
P-12
P-13
P-14
P-15
P-16
P-17
P-18
P-19
P-20
P-21
P-26
Lake Parker
Lake Hancock
Lake Juliana
Lake Mattie
Lake Arietta
Lake Von
Lake Alfred
Lake Haines
Lake Henry
Lake Lowery
Lake Fannie
Lake Howard
Lake Eloise
Lake Hamilton
Ariana Lake
AUBURNDALE
WINTER HAVEN
HAINES CITY
DAVENPORT
LAKE HAMILTON
LAKELAND
EAGLE LAKE
4L-19L
38W-49W
S.C.L. R.R.
MATCH LINE



MULBERRY
BARTOW
FORT MEADE
Lake Buffum
Crooked
P-22
P-23
P-24
P-25
P-27
P-28
P-29
P-30
P-31
HILLSBOROUGH
HARDEE
COUNTY
MANATEE COUNTY
HIGHLANDS COUNTY
MATCH LINE

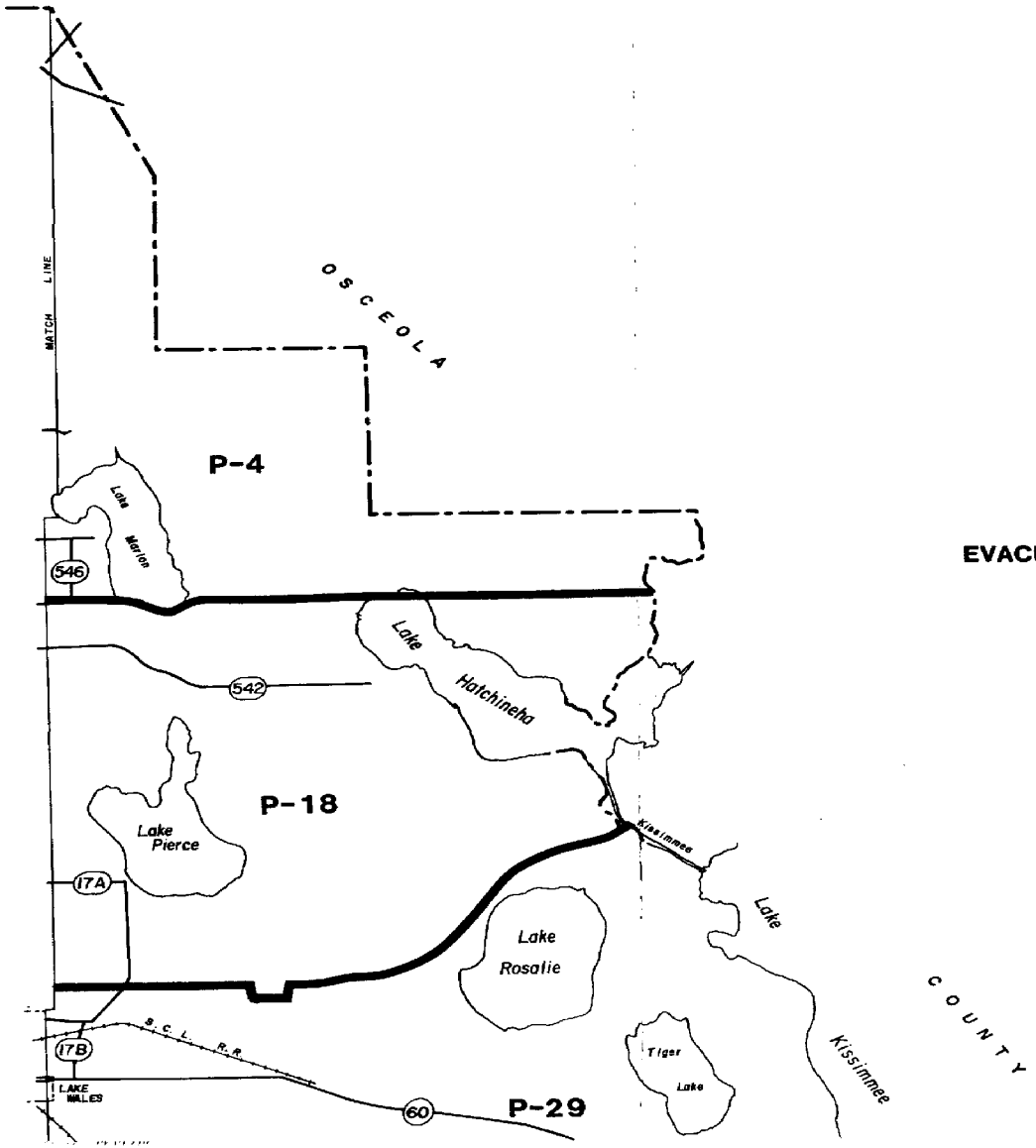


FIGURE 12b

POLK COUNTY

EASTERN PORTION

EVACUATION ZONES/SHELTERS/CHECK POINTS

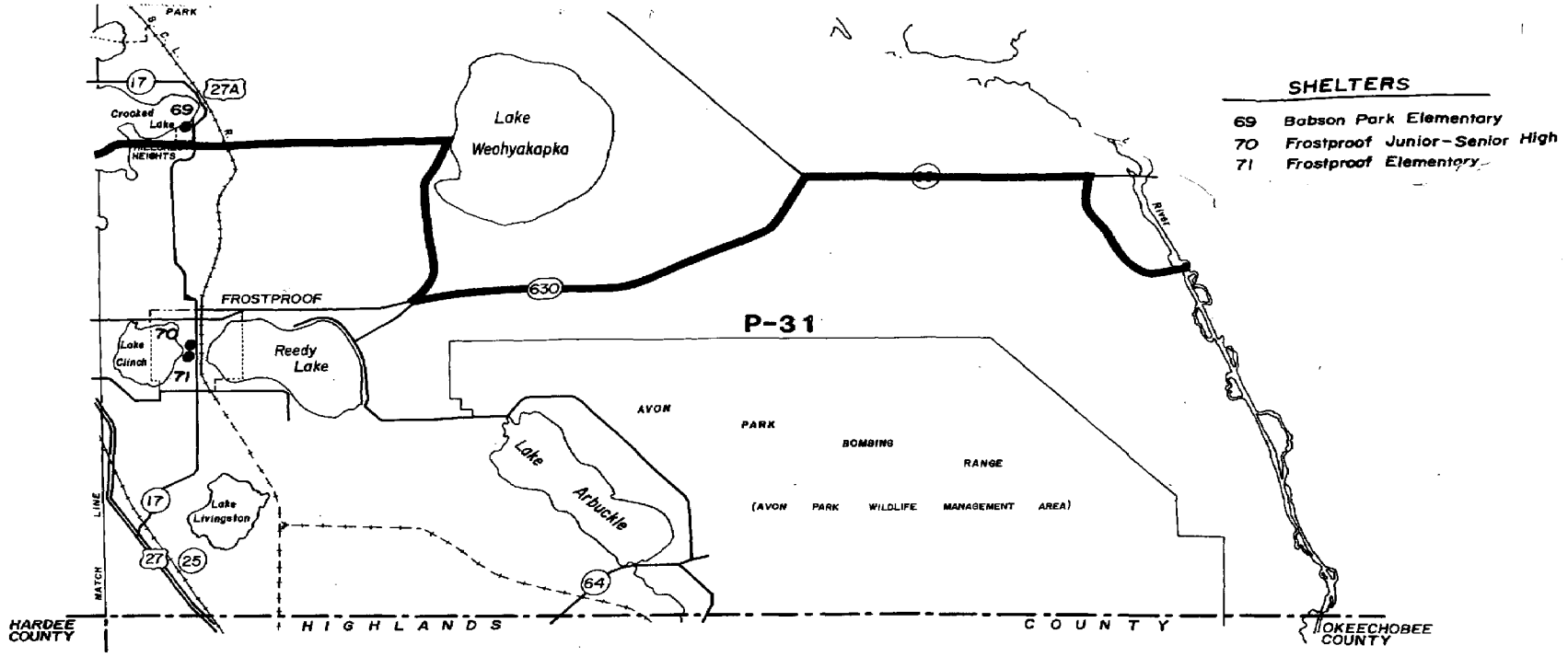
LEGEND

P-1	EVACUATION ZONES
●	SHELTERS
★	CHECK POINTS

prepared by the

CENTRAL FLORIDA REGIONAL PLANNING COUNCIL

October 1982


SHELTERS
69 Babson Park Elementary
70 Frostproof Junior-Senior High
71 Frostproof Elementary
PARK
17
27A
Crooked Lake
69
HEIGHTS
Lake Weohyakapka
630
FROSTPROOF
70
Lake Clinch
71
Reedy Lake
P-31
AVON PARK BOMBING RANGE
(AVON PARK WILDLIFE MANAGEMENT AREA)
Lake Arbuckle
Lake Livingston
17
27
25
64
MATCH LINE
HARDEE COUNTY
HIGHLANDS COUNTY
OKEECHOBEE COUNTY
River

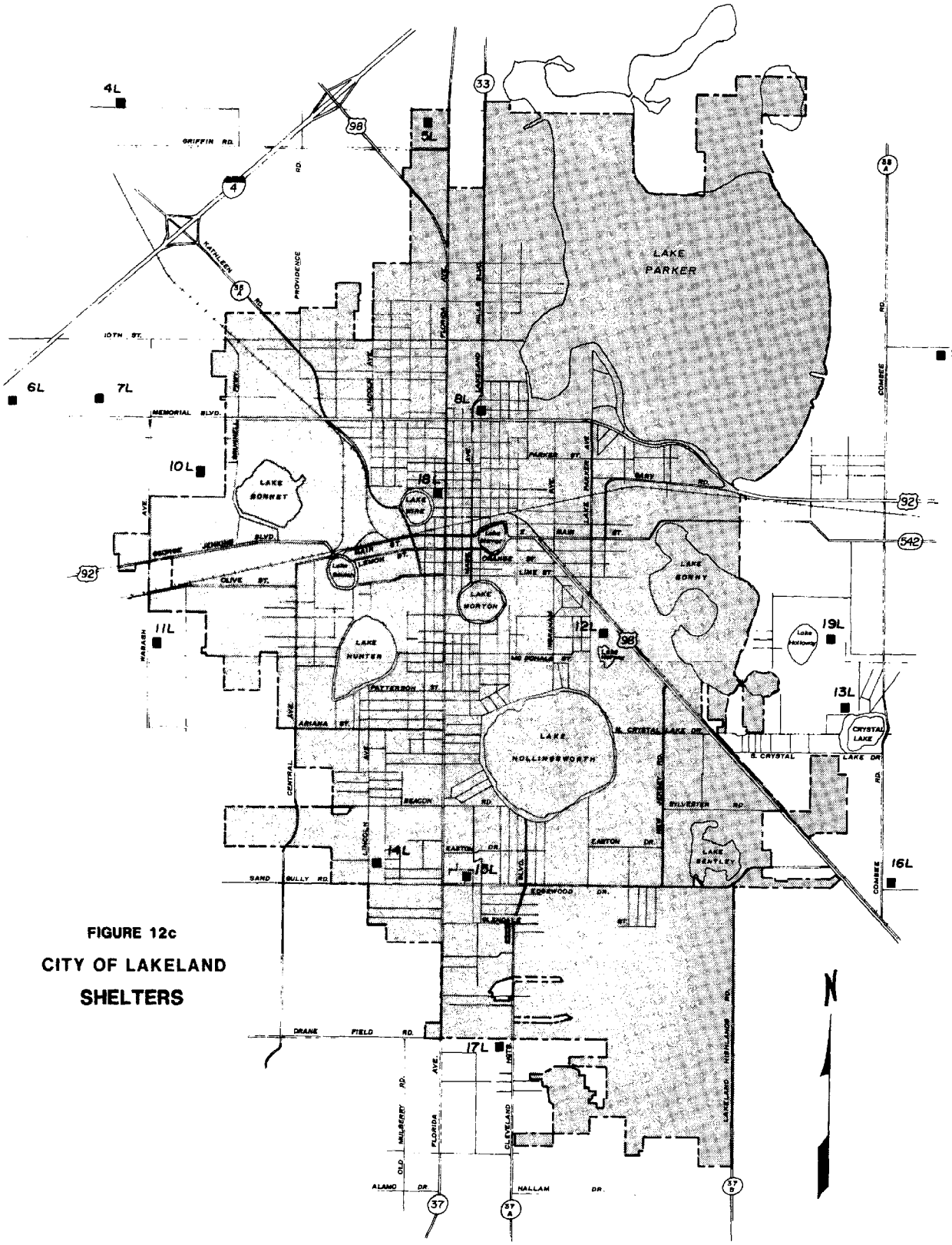


FIGURE 12c

CITY OF LAKELAND

SHELTERS

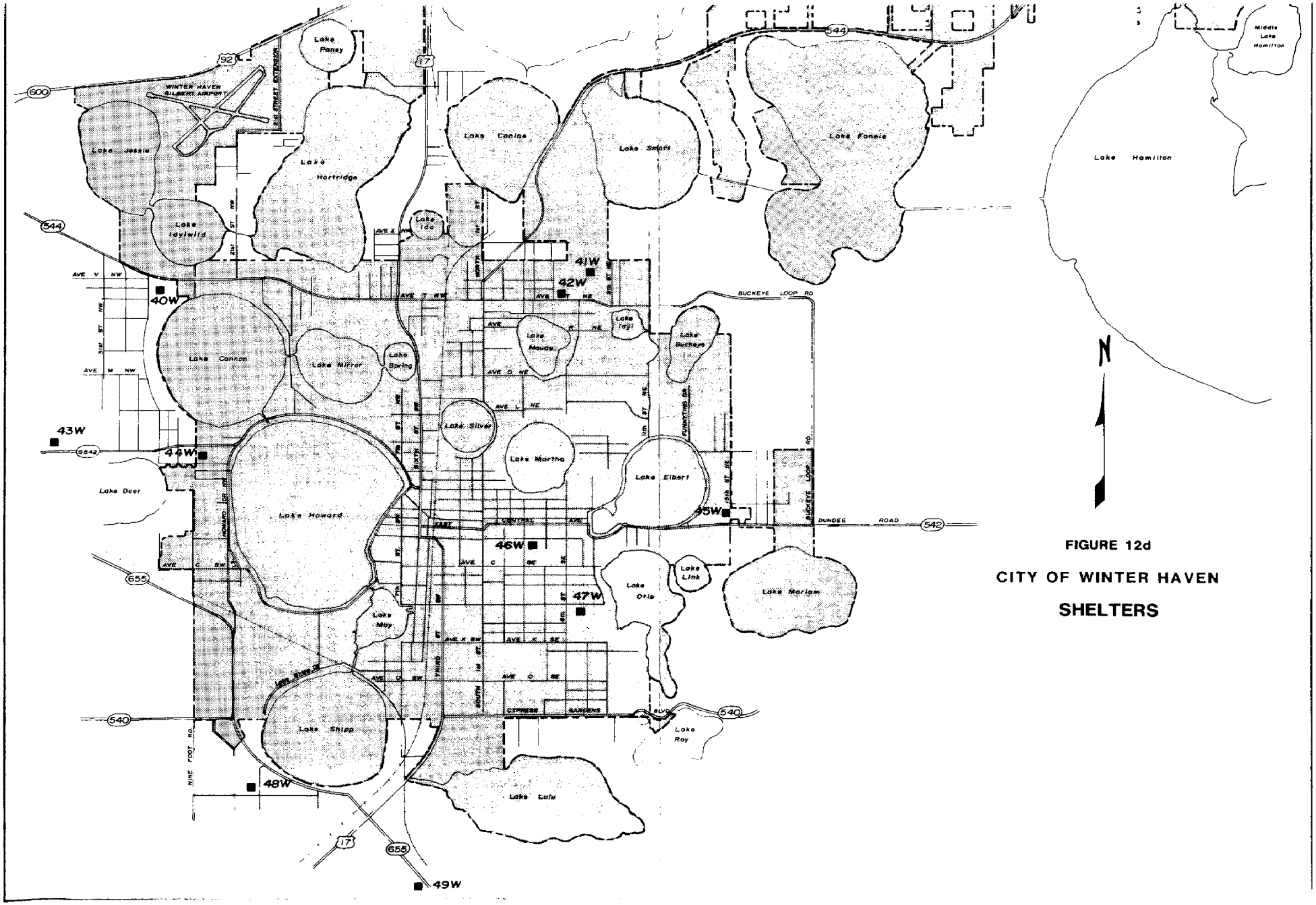
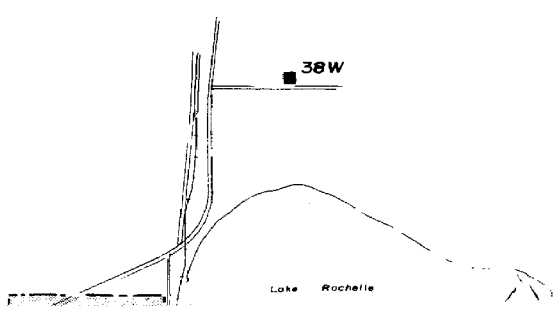
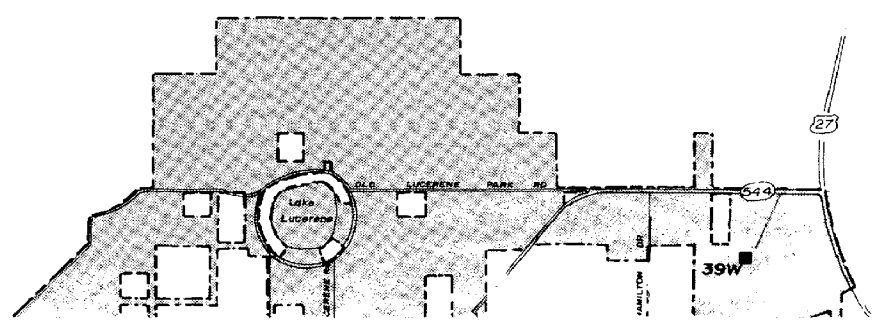


FIGURE 12d

CITY OF WINTER HAVEN

SHELTERS

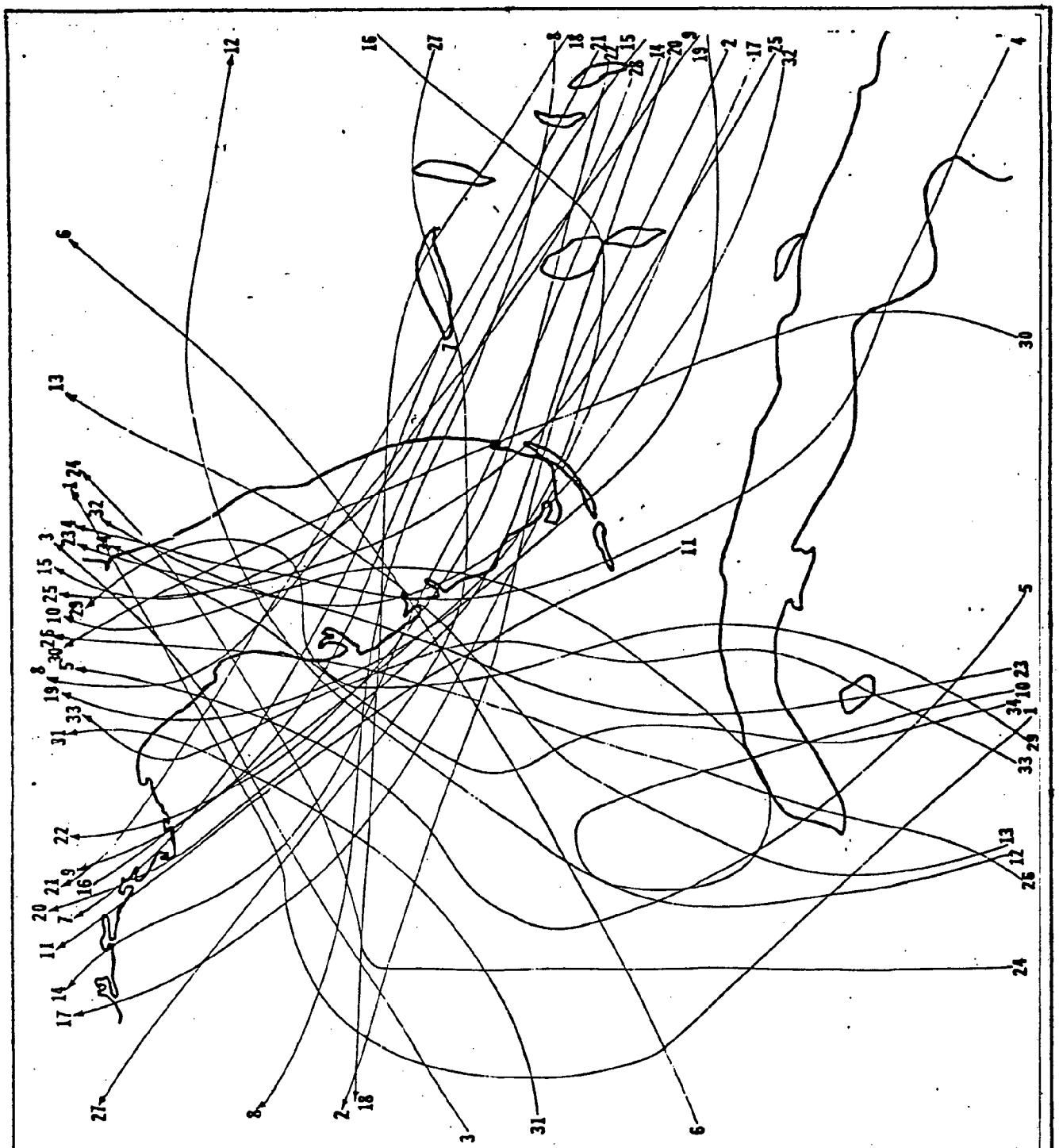

38W
Lake Rochelle


Lake Lucerene
OLD LUCERENE PARK RD
544
27
39W
HAMILTON DR

Appendix A

Tracks of Hurricanes Passing Within 100 Nautical Miles of Tampa Bay

1886 - 1979



TRACKS OF HURRICANES PASSING WITHIN 100 NAUTICAL MILES OF TAMPA BAY: 1886 - 1979

HURRICANES PASSING WITHIN 100 NAUTICAL MILES OF TAMPA BAY: 1886-1979

Index	Starting Date	Storm's Name	Closest Point of Approach (Lat.)	(Long.)	Date at Closest Point of Approach	Distance to Closest Point of Approach (NM)	Wind Speed (MPH)
1	7/14/1886	Not Named	28.5N	83.4W	7/18/1886	63	98
2	8/14/1888	Not Named	26.4N	83.0W	8/17/1888	72	104
3	10/08/1888	Not Named	28.6N	84.0W	10/10/1888	88	97
4	9/18/1894	Not Named	27.4N	81.7W	9/25/1894	56	122
5	9/22/1896	Not Named	28.2N	83.9W	9/29/1896	71	112
6	10/07/1896	Not Named	26.5N	82.0W	10/09/1896	79	98
7	8/02/1898	Not Named	28.0N	82.6W	8/02/1898	26	80
8	8/04/1901	Not Named	27.2N	82.8W	8/12/1901	24	76
9	9/09/1903	Not Named	27.7N	82.8W	9/12/1903	7	75
10	10/09/1910	Not Named	27.6N	81.8W	10/18/1910	51	81
11	8/09/1911	Not Named	27.0N	83.7W	8/10/1911	61	81
12	10/20/1921	Not Named	27.8N	83.1W	10/25/1921	21	124
13	11/29/1925	Not Named	27.2N	82.5W	12/01/1925	31	75
14	9/11/1926	Not Named	27.0N	83.1W	9/19/1926	40	125
15	9/06/1928	Not Named	28.1N	81.8W	9/17/1928	61	129
16	9/22/1929	Not Named	27.3N	83.5W	9/29/1929	44	104
17	8/26/1932	Not Named	26.8N	83.2W	8/30/1932	51	81
18	8/31/1933	Not Named	28.2N	82.2W	9/04/1933	48	94
19	8/29/1935	Not Named	27.4N	83.2W	9/04/1935	25	114
20	7/27/1936	Not Named	27.0N	83.3W	7/30/1936	48	77
21	8/07/1939	Not Named	28.4N	82.4W	8/12/1939	51	75
22	10/03/1941	Not Named	27.4N	83.2W	10/06/1941	26	114
23	10/12/1944	Not Named	27.6N	82.3W	10/19/1944	28	98
24	6/20/1945	Not Named	28.6N	83.3W	6/24/1945	66	106
25	9/12/1945	Not Named	27.8N	81.8W	9/16/1945	54	127
26	10/05/1946	Not Named	27.5N	82.7W	10/08/1946	5	106
27	9/04/1947	Not Named	26.7N	83.4W	9/18/1947	63	98
28	8/23/1949	Not Named	28.3N	82.2W	8/27/1949	52	121
29	9/01/1950	Easy	27.9N	83.1W	9/05/1950	25	127
30	10/13/1950	King	28.1N	81.3W	10/18/1950	85	82
31	10/18/1950	Love	28.4N	83.7W	10/21/1950	70	78
32	8/29/1960	Donna	27.5N	81.9W	9/11/1960	46	130
33	6/04/1966	Alma	27.3N	83.3W	6/09/1966	33	113
34	10/13/1968	Gladys	28.1N	83.3W	10/18/1968	43	81

SOURCE: National Hurricane Center, Miami, FL

Appendix B

Saffir/Simpson Hurricane Scale

THE SAFFIR/SIMPSON HURRICANE SCALE

The Saffir/Simpson Hurricane Scale is used by the National Weather Service to give public safety officials a continuing assessment of the potential for wind and storm surge damage from a hurricane in progress. Scale numbers are made available to public safety officials when a hurricane is within 72 hours of landfall. Scale assessments are revised regularly as new observations are made, and public safety organizations are kept informed of new estimates of the hurricane's disaster potential.

Scale numbers range from 1 to 5. Scale No. 1 begins with hurricanes in which the maximum sustained winds are at least 74 mph, or which will produce a storm surge 4 to 5 feet above normal water level, while Scale No. 5 applies to those in which the maximum sustained winds are 155 mph or more, which have the potential of producing a storm surge more than 18 feet above normal.

The Scale was developed by Herbert Saffir, Dade County, Florida, consulting engineer, and Dr. Robert H. Simpson, former National Hurricane Center director, and projects scale assessment categories as follows:

Category No. 1 - Winds of 74 to 95 mph. Damage primarily to shrubbery, trees, foliage, and unanchored mobile homes. No real damage to other structures. Some damage to poorly constructed signs. Storm surge 4 to 5 feet above normal. Low-lying coastal roads inundated, minor pier damage, some small craft in exposed anchorage torn from moorings.

Category No. 2 - Winds of 96 to 110 mph. Considerable damage to shrubbery and tree foliage; some trees blown down. Major damage to exposed mobile homes. Extensive damage to poorly constructed signs. Some damage to roofing materials of buildings; some window and door damage. Coastal roads and low-lying escape routes inland cut by rising water two to four hours before arrival of hurricane center. Considerable damage to piers. Marinas flooded. Small craft in unprotected anchorages torn from moorings. Evacuation of some shoreline residences and low-lying island areas required.

Category No. 3 - Winds of 111 to 130 mph. Foliage torn from trees; large trees blown down. Practically all poorly constructed signs blown down. Some damage to roofing materials of buildings; some window and door damage. Some structural damage to small buildings. Mobile homes destroyed. Storm surge 9 to 12 feet above normal.

Serious flooding at coast and many smaller structures near coast destroyed; large structures near coast damaged by battering waves and floating debris. Low-lying escape routes inland cut by rising water three to five hours before hurricane center arrives. Flat terrain 5 feet or less above sea level flooded inland 8 miles or more. Evacuation of low-lying residences within several blocks of shoreline possibly required.

Category No. 4 - Winds of 131 to 155 mph. Shrubs and trees blown down; all signs down. Extensive damage to roofing materials, windows, and doors. Complete failure of roofs on many small residences. Complete destruction of mobile homes. Storm surge 13 to 18 feet above normal. Flat terrain 10 feet or less above sea level flooded inland as far as six miles. Major damage to lower floors to structures near shore due to flooding and battering by waves and floating debris. Low-lying escape routes inland cut by rising water three to five hours before hurricane center arrives. Major erosion of beaches. Massive evacuation of all residences within 500 yards of shore possibly required, and of single-story residences on low ground within two miles of shore.

Category No. 5 - Winds greater than 155 mph. Shrubs and trees blown down; considerable damage to roofs on many residences and industrial buildings. Extensive shattering of glass in windows and doors. Some complete building failures. Small buildings over-turned or blown away. Complete destruction of mobile homes. Storm surge greater than 18 feet above normal. Major damage to lower floors of all structures less than 15 feet above sea level within 500 yards of shore. Low-lying escape routes inland cut by rising water three to five hours before hurricane center arrives. Massive evacuation of residential areas on low ground within five to ten miles of shore possibly required.

Dr. Neil Frank, present National Hurricane Center director, has adapted atmospheric pressure ranges to the Saffir/Simpson Scale. These pressure ranges, along with a numerical breakdown of wind and storm surge ranges are:

SCALE NUMBER	CENTRAL PRESSURES MILLIBARS	CENTRAL PRESSURES INCHES	WINDS (MPH)	SURGE (FT.)	DAMAGE
1	980	28.94	74- 95	4- 5	Minimal
2	965-979	23.5 -28.91	96-110	6- 8	Moderate
3	945-964	27.91-28.47	111-130	9-12	Extensive
4	920-944	27.17-27.88	131-155	13-18	Extreme
5	920	27.17	155+	18+	Catastrophic

Appendix C

Report on Expected Coastal Demand for Inland Shelter Facilities

REVISED

REPORT ON THE EXPECTED COASTAL DEMAND FOR INLAND COUNTY SHELTER FACILITIES FROM THE TAMPA BAY AND SOUTHWEST FLORIDA PLANNING REGIONS

Prepared By:

Department of Veteran and Community Affairs
Division of Public Safety Planning and Assistance
Bureau of Disaster Preparedness

INTRODUCTION

As a result of the implementation of Florida's Coastal Management Program, The Department of Veteran and Community Affairs was awarded funding to conduct an inland hurricane shelter study. The majority of work to be accomplished with this grant will be carried out by the Central, East Central, and Withlacoochee Regional Planning Councils.

As part of its support to the study effort, the Bureau of Disaster Preparedness was assigned the task of providing the following information to these agencies:

A. Expected coastal demand for shelter facilities resulting from hurricanes striking the Tampa Bay area, the southwest Florida area, and for a hurricane parallelling Florida's west coast.

B. Identification of evacuation routes to be used by coastal evacuees seeking refuge.

C. Identification of the number of vehicles and people expecting to enter inland counties for shelter, by evacuation route.

The following report presents the results of this research effort, explains the methodology used in the analysis, and provides a summary of the work effort's findings.

METHODOLOGY

The procedure used for determining the expected coastal demand for inland shelter facilities consisted of three steps:

A. Identifying regional evacuation scenarios to use as a basis for determining coastal demand for shelter.

B. Identifying routes evacuees will use in entering inland counties.

C. Estimating the number of coastal evacuees entering inland counties by these evacuation routes.

The sources used to derive this information were the Tampa Bay Regional Hurricane Evacuation Plan, Technical Data Report; public information tabloids published for dissemination throughout the Tampa Bay Planning Region; the Southwest Florida Regional Hurricane Evacuation Plan; and discussions with coastal county civil defense directors and staff from the Tampa Bay and Southwest Florida Regional Planning Councils. Each step of this methodology is discussed in more detail in the following section.

Step A. Identify Regional Scenarios

Hurricanes with parallelling and landfalling tracks were chosen for regional evacuation scenarios if they met the following criteria:

A. That the exposure from this track represented the worst probable case for evacuation for each county in each planning region, or

B. That the track produced one of the five disaster potential intensities on the Saffir-Simpson Hurricane Scale for each county in the two regions.

Using this criteria, hypothetical hurricane tracks simulated by either the Tampa Bay or the Charlotte Harbor SLOSH (Sea Lake Overland Surge Height) Model were selected, from which the number of people to be evacuated were identified from the two hurricane evacuation studies. The resulting evacuation scenarios and their regional impact are depicted in Table I. For the purpose of this analysis, letter rather than number designations represent the differing levels of vulnerability posed by the regional scenario: "A" corresponds to a category one hurricane and "E"

represents a category 5 hurricane.

Step B. Identify Evacuation Routes

Highways or roads to be used for interregional evacuation were identified from the two coastal regional hurricane evacuation studies and from discussions with coastal county civil defense directors. These routes are identified in Figure 1.

Step C. Estimate The Number Of Coastal Evacuees Entering Inland Counties By Evacuation Scenario

This portion of the methodology consisted of three steps:

1. Applying knowledge derived from the behavorial studies conducted for each hurricane evacuation study to estimate the percentage of coastal evacuees, who would leave the county or region.

2. Converting evacuation population into vehicle counts using regional specific vehicle occupancy rates.

3. Calculating traffic/population route assignments.

Each of these steps required a number of assumptions before calculations could be undertaken. These assumptions are identified in Figure 2.

The results of this analysis are shown in two series of tables. The Table II series identifies, by regional evacuation scenario, the total number of vehicles and people evacuating into inland planning regions by evacuation route regardless of trip destination (e.g., public shelter, hotel-motel, or friend or relative). The Table III series provides a breakdown by evacuation scenario of the number of evacuees from coastal counties entering either the Central Florida or Withlacoochee Planning Regions that are expected to seek public shelter.

Note the tables identifying the number of evacuees seeking

FIGURE 1

SUMMARY OF HIGHWAYS
TO BE USED IN INTERREGIONAL EVACUATION

Withlacoochee Planning Region

Highway Number/Name	From	To
U.S. 41	Pasco County	Hernando County
U.S. 301	Pasco County	Hernando County
I-75	Pasco County	Hernando County

Central Florida Planning Region

Highway Number/Name	From	To
I-4	Hillsborough County	Polk County
U.S. 92	Hillsborough County	Polk County
S.R. 60	Hillsborough County	Polk County
S.R. 574	Hillsborough County	Polk County
S.R. 640	Hillsborough County	Polk County
S.R. 674	Hillsborough County	Polk County
S.R. 676	Hillsborough County	Polk County
S.R. 62	Manatee County	Hardee County
S.R. 64	Manatee County	Hardee County
S.R. 70	Manatee County	Desoto County
I-75	Sarasota County	County Via S.R. 64
U.S. 41	Sarasota County	Desoto County Via S.R. 70
U.S. 301	Sarasota County	Desoto County Via S.R. 70
S.R. 72	Sarasota County	Desoto County
U.S. 17	Charlotte County	Desoto County
Kings Highway	Charlotte County	Desoto County
S.R. 31	Charlotte County	Desoto County
U.S. 27 (N)	Glades County	Highlands County
U.S. 27 (E)	Hendry County	Palm Beach County
S.R. 84	Collier County	Broward County
U.S. 41 (E)	Collier County	Dade County

FIGURE 2

ASSUMPTIONS USED IN DETERMINING COASTAL COUNTY DEMAND FOR SHELTER FACILITIES IN INLAND COUNTIES

I. Behavorial Assumptions

A. Of the population evacuating out of the Tampa Bay Region, the following may be seeking shelter in interior counties: Pasco County, 49.5%; Pinellas County, 33.8%; Hillsborough County, 38.6%; Manatee County, 34.0% (Source: Tampa Bay Hurricane Evacuation Plan Technical Data Report).

B. 34% of the Southwest Florida Planning Region's population effected by hurricanes will evacuation out of the region (Source: Southwest Florida Regional Hurricane Evacuation Plan).

C. 45% of the Southwest Florida Planning Region's population effected by hurricane will seek shelter (Source: Southwest Florida Regional Hurricane Evacuation Plan).

D. That portion of the population seeking shelter who cannot find it due to an inadequate supply within their county will evacuate out of both Tampa Bay and Southwest Florida Planning Regions.

II. Conversion of Population to Number of Vehicles

A. Vehicle occupancy rates for the Tampa Bay Region were derived from 1970 Census Data updated to 1979 data (Source: Tables G-11 through G-15, Tampa Bay Regional Hurricane Evacuation Plan Technical Data Report).

B. Vehicle occupancy rates for the Southwest Florida Region were derived by dividing the number of people evacuating out of each county by the number of vehicles to be used in such an evacuation (Source: Southwest Florida Regional Hurricane Evacuation Plan).

III. Regional Traffic/Population Assignments

A. Traffic assignments on routes out of the Tampa Bay Region were derived from Appendix G, Tampa Bay Regional Hurricane Evacuation Plan Technical Data Report.

B. Traffic Assignments on routes out of the Southwest Florida Region were based on the routes' abilities to handle traffic based on their roadway capacities. In this manner, maximum use of the regional transportation networks is achieved while providing the shortest evacuation time possible.

FIGURE 2 (CONTINUED)

1. That portion of a county's population evacuating on I-75 would remain on that route until they leave the region.

2. Evacuees using U.S. 41 would gravitate towards I-75 as they leave their respective counties.

3. Evacuees from Collier, Lee, Charlotte, and Sarasota remaining on I-75 will be routed northeast on I-4.

4. Traffic entering Manatee County on U.S. 41 and U.S. 301 from the Southwest Florida Planning Region will be routed east on S.R. 70.

5. Traffic entering Sarasota County on U.S. 41 from Collier, Lee and Charlotte counties will be routed east on S.R. 72.

6. S.R. 765 in Lee County will not be used as an evacuation route by those evacuees from Collier County.

7. S.R. 775 in Charlotte County will not be used as an evacuation route by those evacuees from Lee and Collier Counties.

8. S.R. 31 in Charlotte County will be used primarily by evacuees from Lee County.

public shelter from counties in the Southwest Florida Planning Region are structured differently than the information for counties in the Tampa Bay Region. This is due to a slightly different method for calculating vehicle/population route assignments based on the data provided (see row four for the number of people expected to seek public shelter).

FINDINGS

The demand for inland shelter services, whether it be a public shelter, a hotel or motel, or a friend or relative, ranges from a low of 77,693 to a high of 460,568 people. Those evacuees desiring a public shelter range from a low of 36,152 to a high of 226,212. In all cases, however, the number of people expecting to find refuge within the inland counties of the three planning regions may exceed present capabilities.

The parallelling hurricane produces the greatest impact on inland counties for shelter services. The greatest impact to the Withlacoochee Planning Region is likely to result from a hurricane striking either Pinellas or Hillsborough County (Regional Scenarios 2 or 3). The greatest impact to the Central Florida Planning Region from a landfalling hurricane is one that strikes Sarasota County (Regional Evacuation Scenario 5). Although the landfalling hurricane producing the greatest impact to the East Central Florida Planning Region cannot directly be inferred from this analysis, it is expected that a hurricane striking Pinellas, Hillsborough, or Sarasota County would produce substantial demand for shelter services in this region.

COASTAL COUNTY DEMAND FOR INLAND SHELTERS FROM TAMPA BAY AND SOUTHWEST FLORIDA PLANNING REGIONS

Prepared By:

Department of Veteran And Community Affairs
Division of Public Safety Planning And Assistance
Bureau of Disaster Preparedness

TABLE I

MBINATION OF COUNTY SCENARIOS FORMING REGIONAL SCENARIOS

	COUNTY SCENARIO						
as	Hillsborough	Manatee	Sarasota	Charlotte	Lee	Collier	Glades & Hendry
	B	B	–	–	–	–	–
	D	C	–	–	–	–	–
	E	D	B	–	–	–	–
	C	E	D	–	–	–	–
	–	C	D	D	C	B	All
	–	–	B	D	C	C	All
	–	–	–	D	D	D	All
	–	–	A	B	B	A	All
	–	–	C	B	B	–	All
	–	–	–	A	C	C	All
	–	–	–	–	A	D	All
	A	A	B	C	D	D	All

al Hurricane Evacuation Plan Technical Report.
rricane Evacuation Plan.

TABLE I (Continued)
KEY SHEET

Scenario A = Surge heights from a Category 1 or 2 Storm on the Saffir/Simpson Hurricane Scale, as modeled by the Tampa Bay and Charlotte Harbor Sea Lake Overland Surge Height (SLOSH) computer models.

Scenario B = Surge heights from a Category 2 or 3 Storm on the Saffir/Simpson Hurricane Scale, as modeled by the Tampa Bay and Charlotte Harbor Sea Lake Overland Surge Height (SLOSH) computer models.

Scenario C = Surge heights from a Category 3 or 4 Storm on the Saffir/Simpson Hurricane Scale, as modeled by the Tampa Bay and Charlotte Harbor Sea Lake Overland Surge Height (SLOSH) computer models.

Scenario D = Surge heights from a Category 4 Storm on the Saffir/Simpson Hurricane Scale, as modeled by the Tampa Bay and Charlotte Harbor Sea Lake Overland Surge Height (SLOSH) computer models.

Scenario E = Surge heights from a Category 5 Storm on the Saffir/Simpson Hurricane Scale, as modeled by the Tampa Bay Sea Lake Overland Surge Height (SLOSH) computer model.

All = Evacuation of the population exposed to hurricane wind forces, regardless of category storm.

REGIONAL EVACUATION SCENARIO 1 TABLE 2.1
Worst Case: Pasco (revised 8/13/82)

Evacuation Route Out of Region	Pasco Co. Veh./People	Pinellas Co. Veh./People	Hillsborough Co. Veh./People	Manatee Co. Veh./People	Total
U.S. 41	5313/15748	1808/3919	734/1287	-	7855/20954
U.S. 301	1561/5074	3503/7305	12883/26222	-	17947/38601
I-75	319/884	28052/59195	-	-	28371/60079
Subtotal	7193/21706	33363/70419	13617/27509	-	54173/119634
I-4	-	20058/44004	4915/10321	-	24973/54325
U.S. 92	-	389/969	47/84	-	436/1053
S.R. 60	-	-	2514/5164	-	2514/5164
S.R. 574	-	-	2392/5063	-	2392/5063
S.R. 640	-	-	1602/3292	-	1602/3292
S.R. 674	-	-	2811/5950	-	2811/5950
S.R. 676	-	-	60/131	-	60/131
S.R. 62	-	-	-	1980/5321	1980/5321
S R. 64	-	-	-	5633/15078	5653/15078
S.R. 70	-	-	-	1001/2716	1001/2716
Subtotal	-	20447/44973	14341/30005	8614/23115	43402/98093
TOTAL	7193/21706	53810/115392	27958/57514	8614/23115	97575/217727

REGIONAL EVACUATION SCENARIO 2 TABLE 2.2
Worst Case: Pinellas (revised 8/13/82)

Evacuation Route Out of Region	Pasco Co. Veh./People	Pinellas Co. Veh./People	Hillsborough Co. Veh./People	Manatee Co. Veh./People	Total
U.S. 41	4574/13832	3739/8283	2461/6940	-	10774/29055
U.S. 301	1561/5074	4502/8235	16095/34304	-	22158/47613
I-75	319/884	34865/65958	-	-	35184/66842
Subtotal	6454/19790	43106/82476	18556/41244	-	68116/143510
I-4	-	30715/69721	10374/25345	-	41089/95066
U.S. 92	-	389/969	77/242	-	466/1211
S.R. 60	-	-	3004/6508	-	3004/6508
S.R. 574	-	-	3371/7857	-	3371/7857
S.R. 640	-	-	1909/4168	-	1909/4168
S.R. 674	-	-	3063/6719	-	3063/6719
S.R. 676	-	-	663/1701	-	663/1701
S.R. 62	-	-	-	2855/7934	2855/7934
S R. 64	-	-	-	6555/17820	6555/17820
S.R. 70	-	-	-	1001/2716	1001/2716
Subtotal	-	31104/70690	22461/52540	10411/28470	63976/151700
TOTAL	6634/19790	74210/153166	41017/93784	10411/28470	132092/295210

REGIONAL EVACUATION SCENARIO 3 TABLE 2.3
Worst Case: Hillsborough (revised 8/13/82)

Evacuation Route Out of Region	Pasco Co. Veh./People	Pinellas Co. Veh./People	Hillsborough Co. Veh./People	Manatee Co. Veh./People	Sarasota Co. Veh./People	Total
U.S. 41	3160/9128	2199/4909	2461/6940	-	-	7820/20977
U.S. 301	1561/5074	3875/8235	20333/40146	-	-	25789/53455
I-75	319/884	30928/65988	-	-	-	31247/66872
Subtotal	5040/15086	37002/79132	22794/47086	-	-	64856/141304
I-4	-	30701/69721	12235/28142	-	-	-
via I-75	-	-	-	-	8208/18058	-
Subtotal						51144/115921
U.S. 92	-	389/969	77/242	-	-	466/1211
S.R. 60	-	-	3770/7930	-	-	3770/7930
S.R. 574	-	-	4140/9285	-	-	4140/9285
S.R. 640	-	-	1909/4168	-	-	1909/4168
S.R. 674	-	-	3063/6719	-	-	3063/6719
S.R. 676	-	-	663/1701	-	-	663/1701
S.R. 62	-	-	-	2871/7988	-	2871/7988
S R. 64	-	-	-	7468/20110	-	7468/20110
S.R. 70	-	-	-	1001/2716	-	-
via U.S. 41 & 301	-	-	-		11496/25291	
Subtotal						12497/28007
S.R. 72	-	-	-	-	2304/5069	2304/5069
Subtotal	-	31090/70690	25857/58187	11340/30814	22008/48418	90295/208109
TOTAL	5040/15086	68092/149822	48651/105273	11340/30814	22008/48418	155151/349413

REGIONAL EVACUATION SCENARIO 4 TABLE 2.4
Worst Case: Manatee (revised 8/13/82)

Evacuation Route Out of Region	Pasco Co. Veh./People	Pinellas Co. Veh./People	Hillsborough Co. Veh./People	Manatee Co. Veh./People	Sarasota Co. Veh./People	Total
U.S. 41	2335/6688	867/1891	734/1287	-	-	3936/9866
U.S. 301	1561/5074	3111/4771	13005/26600	-	-	17667/36445
I-75	319/884	17564/43109	-	-	-	17883/43993
Subtotal	4215/12646	21542/49771	13739/27887	-	-	39486/90304
I-4	-	17821/35360	5164/9844	-	-	-
via I-75	-	-	-	-	16089/32178	-
Subtotal						39074/77382
U.S. 92	-	389/969	77/242	-	-	466/1211
S.R. 60	-	-	3004/6508	-	-	3004/6508
S.R. 574	-	-	2392/5063	-	-	2392/5063
S.R. 640	-	-	1772/3721	-	-	1772/3721
S.R. 674	-	-	3063/6719	-	-	3063/6719
S.R. 676	-	-	425/1117	-	-	425/1117
S.R. 62	-	-	-	2979/8250	-	2979/8250
S R. 64	-	-	-	7468/20110	-	7468/20110
S.R. 70	-	-	-	2145/5896	-	-
via U.S. 41 & 301	-	-	-	-	22533/45066	-
Subtotal						24678/50962
S.R. 72	-	-	-	-	4517/9034	4517/9034
Subtotal	-	18210/36329	15897/33214	12592/34256	43139/86278	89838/190077
TOTAL	4215/12646	39752/86100	29636/61101	12592/34256	43139/86278	129324/280381

REGIONAL EVACUATION SCENARIO 5
Worst Case: Sarasota (revised 8/13/82)

TABLE 2.5

Evacuation Route Out of Region	Manatee Co. Veh./People	Sarasota Co. Veh./People	Charlotte Co. Veh./People	Lee Co. Veh./People	Collier Co. Veh./People	Glades Co. Veh./People	Hendry Co. Veh./People	Total
I-4 via I-75	-	16089/32178	8417/15151	31954/70293	8101/17012	-	-	64561/122566
S.R. 62	2979/8250	-	-	-	-	-	-	2979/8250
S.R. 64	7468/20110	-	-	-	-	-	-	7468/20110
S.R. 70	2145/5896	-	-	-	-	-	-	-
via U.S. 41 & 301	-	22533/45066	5308/9554	4929/10844	393/825	-	-	-
Subtotal								35308/72185
S.R. 72	-	4517/9034	-	-	-	-	-	-
via U.S. 41	-	-	1393/2507	1293/2845	103/216	-	-	-
Subtotal								7306/14602
Kings Highway	-	-	3219/5794	4652/10234	372/781	-	-	8243/16809
U.S. 17	-	-	3109/5596	4493/9885	359/754	-	-	7961/16235
S.R. 31	-	-	-	8229/18104	902/1894	-	-	9131/19998
U.S. 27	-	-	2363/4238	9203/20247	1714/3599	259/259	430/430	13969/28773
S.R. 721	-	-	-	-	-	318/318	-	318/318
S.R. 78	-	-	-	-	-	301/301	-	301/301
Subtotal	12592/34256	43139/86278	23809/42841	64753/142452	11944/25082	878/878	430/430	157545/331767
TOTAL	12592/34256	43139/86278	23809/42841	64753/142452	11944/25082	878/878	430/430	157545/332217

REGIONAL EVACUATION SCENARIO 6 TABLE 2.6
Worst Case: Charlotte (revised 8/13/82)

Evacuation Route Out of Region	Sarasota Co. Veh./People	Charlotte Co. Veh./People	Lee Co. Veh./People	Collier Co. Veh./People	Glades Co. Veh./People	Hendry Co. Veh./People	Total
I-4 via I-75	8208/18060	8417/15151	31954/70293	13277/27882	-	-	61856/131386
S.R. 70							
From Sarasota	11496/25291	-	-	-	-	-	-
via U.S. 41 & 301		5308/9554	4929/10844	646/1357	-	-	-
Subtotal							22379/47046
S.R. 72	2304/5069	1393/2507	1293/2845	169/355	-	-	5159/10776
Kings Highway	-	3219/5794	4652/10234	609/1279	-	-	8480/17307
U.S. 17	-	3109/5596	4493/9885	588/1235	-	-	8190/16716
S.R. 31	-	-	8229/18104	1478/3104	-	-	9707/21208
U.S. 27	-	2363/4238	9203/20247	2809/5899	259/259	430/430	15064/31073
S.R. 721	-	-	-	-	318/318	-	318/318
S.R. 78	-	-	-	-	301/301	-	301/301
Subtotal	22008/48418	23809/42840	64753/142452	19576/41111	878/878	430/430	131154/276131
TOTAL	22008/48418	23809/42840	64753/142452	19576/41111	878/878	430/430	148663/276131

REGIONAL EVACUATION SCENARIO 7 TABLE 2.7
Worst Case: Lee/Collier (revised 8/13/82)

Evacuation Route Out of Region	Charlotte Co. Veh./People	Lee Co. Veh./People	Collier Co. Veh./People	Glades Co. Veh./People	Hendry Co. Veh./People	Total
I-4 via I-75	8417/15151	32134/70695	14639/29278	-	-	55190/115124
S.R. 70 via U.S. 41 & 301	5308/9554	4956/10903	707/1414	-	-	10971/21871
S.R. 72 via U.S. 41	1393/2507	1300/2860	186/372	-	-	2879/5739
Kings Highway	3219/5794	4649/10294	672/1344	-	-	8540/17432
U.S. 17	3109/5596	4518/9940	649/1296	-	-	8276/16832
S.R. 31	-	8275/18205	1630/3260	-	-	9905/21465
U.S. 27	1755/4238	9256/20363	3098/6196	259/259	430/430	14798/31486
S.R. 721	-	-	-	318/318	-	318/318
S.R. 78	-	-	-	301/301	-	301/301
Subtotal	23201/42841	65088/143260	21581/43160	878/878	430/430	111178/230569
TOTAL	23201/42841	65088/143260	21581/43160	878/878	430/430	111178/230569

REGIONAL EVACUATION SCENARIO 8
Worst Case: (revised 8/13/82)

TABLE 2.8

Evacuation Route Out of Region	Sarasota Co. Veh./People	Charlotte Co. Veh./People	Lee Co. Veh./People	Collier Co. Veh./People	Glades Co. Veh./People	Hendry Co. Veh./People	Total
I-4 via I-75	6379/14672	2974/5651	14204/31249	7108/14927	-	-	30665/66499
S.R. 70 via U.S. 41 & 301	8934/20549	1874/3561	2191/4820	345/725	-	-	13344/29645
S.R. 72 via U.S. 41	1791/4119	492/935	575/1265	91/191	-	-	2949/6510
Kings Highway	-	1138/2162	2068/4550	326/685	-	-	3532/7397
U.S. 17	-	1099/2088	1997/4393	315/662	-	-	3411/7143
S.R. 31	-	-	3658/8048	791/1661	-	-	4449/9709
U.S. 27	-	835/1587	4091/9000	1504/3158	259/259	430/430	7119/14434
S.R. 721	-	-	-	-	318/318	-	318/318
S.R. 78	-	-	-	-	301/301	-	301/301
Subtotal	17104/39340	8412/15984	28784/63325	10480/22009	878/878	430/430	66088/141966
TOTAL	17104/39340	8412/15984	28784/63325	10480/22009	878/878	430/430	66088/141966

REGIONAL EVACUATION SCENARIO 9
Worst Case: (revised 8/13/82)

TABLE 2.9

Evacuation Route Out of Region	Sarasota Co. Veh./People	Charlotte Co. Veh./People	Lee Co. Veh./People	Glades Co. Veh./People	Hendry Co. Veh./People	Total
I-4 via I-75	11900/24990	2974/5651	14166/31165	-	-	29040/61806
S.R. 70 via U.S. 41 & 301	16667/35000	1874/3561	2185/4807	-	-	20726/43368
S.R. 72 via U.S. 41	3341/7016	492/935	573/1261	-	-	4406/9212
Kings Highway	-	1138/2162	2063/4539	-	-	3201/6701
U.S. 17	-	1099/2088	1992/4382	-	-	3091/6470
S.R. 31	-	-	3648/8026	-	-	3648/8026
U.S. 27	-	835/1587	4081/8978	259/259	430/430	5605/11254
S.R. 721	-	-	-	318/318	-	318/318
S.R. 78	-	-	-	301/301	-	301/301
Subtotal	31908/67006	8412/15984	28708/63158	878/878	430/430	70336/147456
TOTAL	31908/67006	8412/15984	28708/63158	878/878	430/430	70336/147456

REGIONAL EVACUATION SCENARIO 10
Worst Case: (revised 8/13/82)

TABLE 2.10

Evacuation Route Out of Region	Charlotte Co. Veh./People	Lee Co. Veh./People	Collier Co. Veh./People	Glades Co. Veh./People	Hendry Co. Veh./People	Total
I-4 via I-75	1730/3287	31954/70293	13277/27882	-	-	46961/101462
S.R. 70 via U.S. 41 & 301	1090/2071	4249/10844	646/1357	-	-	5985/14272
S.R. 72 via U.S. 41	286/543	1293/2845	169/355	-	-	1748/3743
Kings Highway	662/1258	4652/10234	609/1279	-	-	5923/12771
U.S. 17	639/1214	4493/9885	588/1235	-	-	5720/12334
S.R. 31	-	8229/18104	1478/3104	-	-	9707/21208
U.S. 27	486/923	9203/20247	2809/5899	259/259	430/430	3187/27758
S.R. 721	-	-	-	318/318	-	318/318
S.R. 78	-	-	-	301/301	-	301/301
Subtotal	4893/9296	64073/142452	19576/41111	878/878	430/430	89850/194167
TOTAL	4893/9296	64073/142452	19576/41111	878/878	430/430	89850/194167

REGIONAL EVACUATION SCENARIO 11
Worst Case: (revised 8/13/82)

TABLE 2.11

Evacuation Route Out of Region	Lee Co. Veh./People	Collier Co. Veh./People	Glades Co. Veh./People	Hendry Co. Veh./People	Total
I-4 via I-75	7128/16394	14639/29278	-	-	21767/45672
S.R. 70 via U.S. 41 & 301	1100/2530	707/1414	-	-	1807/3944
S.R. 72 via U.S. 41	288/662	186/372	-	-	474/1034
Kings Highway	1038/2387	672/1344	-	-	1710/3731
U.S. 17	1002/2305	649/1296	-	-	1651/3601
S.R. 31	1836/4223	1630/3260	-	-	3466/7483
U.S. 27	2054/4724	3098/6196	259/259	430/430	5841/11609
S.R. 721	-	-	318/318	-	318/318
S.R. 78	-	-	259/259	-	259/259
Subtotal	14446/33225	21580/43160	878/878	430/430	37334/77693
TOTAL	14446/33225	21580/43160	878/878	430/430	37334/77693

REGIONAL EVACUATION SCENARIO 12 TABLE 2.12
Worst Case: Parallel (revised 8/13/82)

Evacuation Route Out of Region	Pasco Co. Veh./People	Pinellas Co. Veh./People	Hillsborough Co. Veh./People	Manatee Co. Veh./People	Sarasota Co. Veh./People	Total
U.S. 41	3136/9070	1316/2922	734/1287	-	-	5186/13279
U.S. 301	1561/5074	3503/7305	12823/26222	-	-	17887/38601
I-75	319/884	25371/52732	-	-	-	25690/53616
Subtotal	5016/15028	30190/62959	13557/27509	-	-	48763/105496
I-4	-	16422/36793	4611/9401	-	-	-
via I-75	-	-	-	-	8208/18060	-
U.S. 92	-	389/969	-	-	-	389/969
S.R. 60	-	-	2509/5133	-	-	2509/5133
S.R. 574	-	-	2392/5063	-	-	2392/5063
S.R. 640	-	-	1443/2733	-	-	1443/2733
S.R. 674	-	-	2811/5950	-	-	2811/5950
S.R. 676	-	-	48/95	-	-	48/95
S.R. 62	-	-	-	1855/4967	-	1855/4967
S R. 64	-	-	-	5076/13292	-	-
S.R. 70	-	-	-	1011/2716	-	-
via U.S. 41 & 301	-	-	-	-	11496/25291	-
S.R. 72	-	-	-	-	2304/5069	-
Subtotal	-	16811/37762	13814/28375	7942/20975	22008/48420	-
TOTAL	5016/15028	47001/100721	27371/55884	7942/20975	22008/48420	-

REGIONAL EVACUATION SCENARIO
Worst Case: Parallel (revised 8/13/82)

TABLE 2.12 (Continued)

Evacuation Route Out of Region	Charlotte Co. Veh./People	Lee Co. Veh./People	Collier Co. Veh./People	Glades Co. Veh./People	Hendry Co. Veh./People	Total
I-4	-	-	-	-	-	-
via I-75	6250/11250	32134/70695	14639/29278	-	-	-
Subtotal						82264/175477
S.R. 70	-	-	-	-	-	-
via U.S. 41 & 301	3936/7085	4956/10903	707/1414	-	-	-
Subtotal						22106/47409
S.R. 72	-	-	-	-	-	-
via U.S. 41	1033/1859	1300/2860	186/372	-	-	-
Subtotal						4823/10160
Kings Highway	2391/4303	4679/10294	672/1344	-	-	7742/15941
U.S. 17	2309/4156	4518/9940	649/1296	-	-	7476/15392
S.R. 31	-	8275/18205	1630/3260	-	-	9905/21465
U.S. 27	1755/3159	9256/20363	3098/6196	259/259	430/430	14798/30407
S.R. 721	-	-	-	318/318	-	318/318
S.R. 78	-	-	-	301/301	-	301/301
Subtotal	17674/31812	65118/143260	21581/43160	878/878	430/430	166256/355062
TOTAL	17674/31812	65118/143260	21581/43160	878/878	430/430	215019/460568

TABLE 3.1

REGIONAL SCENARIO 1 (revised 8/13/82)

	Pasco	Pinellas	Hillsborough	Manatee	Other Counties	Total
Total Evacuation Population	21706	115392	57514	23115	--	217727
Evacuation Pop. Entering Withlacoochee Region	21706	70419	27509	--	--	119634
No. of People Desiring Shelter	10744	23801	10618	--	--	45163
Evacuation Pop. Entering Central Florida Region	--	44973	30005	23115	--	98093
No. of People Desiring Shelter	--	15201	11582	7859	--	34642

TABLE 3.2

REGIONAL SCENARIO 2 (revised 8/13/82)

	Pasco	Pinellas	Hillsborough	Manatee	Other Counties	Total
Total Evacuation Population	19790	153166	93784	28470	--	295210
Evacuation Pop. Entering Withlacoochee Region	19790	82476	41244	--	--	143510
No. of People Desiring Shelter	9796	27877	15920	--	--	53593
Evacuation Pop. Entering Central Florida Region	--	70690	52540	28470	--	151700
No. of People Desiring Shelter	--	23893	20280	9680	--	53853

TABLE 3.3

REGIONAL SCENARIO 3 (revised 8/13/82)

	Pasco	Pinellas	Hillsborough	Manatee	Other Counties	Total
Total Evacuation Population	15086	149822	105273	30814	48418	349413
Evacuation Pop. Entering Withlacoochee Region	15086	79132	47086	--	--	141304
No. of People Desiring Shelter	7468	26747	18175	--	--	52390
Evacuation Pop. Entering Central Florida Region	--	70690	58187	30814	See Next Table	208109
No. of People Desiring Shelter	--	23893	22460	10477	See Next Table	58830 (4 cntys only)

TABLE 3.3 (continued)

REGIONAL SCENARIO 3 (revised 8/13/82)

	Sarasota	Charlotte	Lee	Collier	Glades & Hendry	Total
Pop. Subject to Evacuation	86196					86196
No. of People Leaving County (.34 of Row 1)	29511					29511
No. of People Desiring Shel. (.45) of Row 1)	39112					39112
No. of People Not Finding Shelter in County	18909					18909
Excess Capacity in Other Counties	0					0
Evac. Pop. Out of Region (Row 2 + 4 - 5)	48418					48418
Evacuees entering regions other than CFRPC and WRPC	0					0
TOTAL	48418					48418

Sources:
1. Table 15, Southwest Florida Regional Hurricane Evacuation Study
2. Table 4, Appendix D, Behavorial Survey Analysis
3. Tables 7 through 11, Appendix J, Shelter Needs, Shelter Assignments

TABLE 3.4

REGIONAL SCENARIO 4 (revised 8/13/82)

	Pasco	Pinellas	Hillsborough	Manatee	Other Counties	Total
Total Evacuation Population	12646	86100	61101	34256	86278	230381
Evacuation Pop. Entering Withlacoochee Region	12646	49771	28877	--	--	90304
No. of People Desiring Shelter	6260	16823	11147	--	--	34230
Evacuation Pop. Entering Central Florida Region	--	36329	33214	34256	See Next Table	190077
No. of People Desiring Shelter	--	12279	12820	11647	See Next Table	36746 (4 cnty only)

TABLE 3.4 (continued)

REGIONAL SCENARIO 4 (revised 8/13/82)

	Sarasota	Charlotte	Lee	Collier	Glades & Hendry	Total
Pop. Subject to Evacuation	127390					127390
No. of People Leaving County (.34 of Row 1)	43313					43313
No. of People Desiring Shel. (.45) of Row 1)	57326					57326
No. of People Not Finding Shelter in County	42965					42965
Excess Capacity in Other Counties	0					0
Evac. Pop. Out of Region (Row 2 + 4 - 5)	86278					86278
Evacuees entering regions other than CFRPC and WRPC	0					0
TOTAL	86278					86278

Sources:
1. Table 15, Southwest Florida Regional Hurricane Evacuation Study
2. Table 4, Appendix D, Behavorial Survey Analysis
3. Tables 7 through 11, Appendix J, Shelter Needs, Shelter Assignments

TABLE 3.5

REGIONAL SCENARIO 5 (revised 8/13/82)

	Pasco	Pinellas	Hillsborough	Manatee	Other Counties	Total
Total Evacuation Population				34256	297961	332217
Evacuation Pop. Entering Withlacoochee Region						
No. of People Desiring Shelter						
Evacuation Pop. Entering Central Florida Region				34256	See Next Page	34256
No. of People Desiring Shelter				11647	See Next Page	11647

TABLE 3.5 (continued)

REGIONAL SCENARIO 5 (revised 8/13/82)

	Sarasota	Charlotte	Lee	Collier	Glades & Hendry	Total
Pop. Subject to Evacuation	127390	54229	202368	61412	7116	452515
No. of People Leaving County (.34 of Row 1)	43313	18438	68805	20880	2420	153856
No. of People Desiring Shel. (.45) of Row 1)	57326	24403	91066	27635	3202	203362
No. of People Not Finding Shelter in County	42965	24403	87093	17935	--	172396
Excess Capacity in Other Counties	0	0	335	185	--	520
Evac. Pop. Out of Region (Row 2 + 4 - 5)	86278	42841	155563	38630	2420	325732
Evacuees entering regions other than CFRPC and WRPC	--	--	13111	13548	1112	27771
TOTAL	86278	42841	142452	25082	1308	297961

Sources:
1. Table 15, Southwest Florida Regional Hurricane Evacuation Study
2. Table 4, Appendix D, Behavorial Survey Analysis
3. Tables 7 through 11, Appendix J, Shelter Needs, Shelter Assignments

TABLE 3.6

REGIONAL SCENARIO 6 (revised 8/13/82)

	Sarasota	Charlotte	Lee	Collier	Glades & Hendry	Total
Pop. Subject to Evacuation	86916	54229	202368	85746	7116	436375
No. of People Leaving County (.34 of Row 1)	29511	18438	68805	29154	2420	148328
No. of People Desiring Shel. (.45) of Row 1)	39112	24403	91066	38586	3202	196369
No. of People Not Finding Shelter in County	18909	24403	87093	34348	--	164753
Excess Capacity in Other Counties	0	0	335	185	--	520
Evac. Pop. Out of Region (Row 2 + 4 - 5)	48418	42840	155563	63317	2420	312558
Evacuees entering regions other than CFRPC and WRPC	0	0	13111	22206	1112	36425
TOTAL	48418	42840	142452	41111	1308	276129

Sources:
1. Table 15, Southwest Florida Regional Hurricane Evacuation Study
2. Table 4, Appendix D, Behavorial Survey Analysis
3. Tables 7 through 11, Appendix J, Shelter Needs, Shelter Assignments

TABLE 3.7

REGIONAL SCENARIO 7 (revised 8/13/82)

	Sarasota	Charlotte	Lee	Collier	Glades & Hendry	Total
Pop. Subject to Evacuation	-	54229	204940	89755	7116	542141
No. of People Leaving County (.34 of Row 1)		18438	69680	30517	2420	120965
No. of People Desiring Shel. (.45) of Row 1)		24403	92223	40390	3202	160218
No. of People Not Finding Shelter in County		24403	87093	36152	-	147648
Excess Capacity in Other Counties		0	335	185	-	520
Evac. Pop. Out of Region (Row 2 + 4 - 5)		42841	156438	66484	2420	268183
Evacuees entering regions other than CFRPC and WRPC		-	13178	23324	1112	37614
TOTAL		42841	143260	43160	1308	230569

Sources:
1. Table 15, Southwest Florida Regional Hurricane Evacuation Study
2. Table 4, Appendix D, Behavorial Survey Analysis
3. Tables 7 through 11, Appendix J, Shelter Needs, Shelter Assignments

TABLE 3.8

REGIONAL SCENARIO 8 (revised 8/13/82)

	Sarasota	Charlotte	Lee	Collier	Glades & Hendry	Total
Pop. Subject to Evacuation	75371	40882	164447	40556	7116	328372
No. of People Leaving County (.34 of Row 1)	25626	13900	55912	13789	2420	111647
No. of People Desiring Shel. (.45) of Row 1)	33917	18397	74001	18250	3202	147767
No. of People Not Finding Shelter in County	13714	2081	13572	20292	--	49659
Excess Capacity in Other Counties	0	0	335	185	--	520
Evac. Pop. Out of Region (Row 2 + 4 - 5)	39340	15984	69149	33896	2420	160789
Evacuees entering regions other than CFRPC and WRPC	0	0	5824	11887	1112	18823
TOTAL	39340	15984	63325	22009	1308	141966

Sources:
1. Table 15, Southwest Florida Regional Hurricane Evacuation Study
2. Table 4, Appendix D, Behavorial Survey Analysis
3. Tables 7 through 11, Appendix J, Shelter Needs, Shelter Assignments

TABLE 3.9

REGIONAL SCENARIO 9 (revised 8/13/82)

	Sarasota	Charlotte	Lee	Collier	Glades & Hendry	Total
Pop. Subject to Evacuation	110391	40882	164447	--	7116	322836
No. of People Leaving County (.34 of Row 1)	37533	13900	55912	--	2420	110547
No. of People Desiring Shel. (.45) of Row 1)	49676	18397	74001	--	3202	145276
No. of People Not Finding Shelter in County	29473	2081	13572	--	--	45126
Excess Capacity in Other Counties	0	0	520	--	--	520
Evac. Pop. Out of Region (Row 2 + 4 - 5)	67006	15984	68964	--	2420	154374
Evacuees entering regions other than CFRPC and WRPC	0	0	5806	--	1112	6918
TOTAL	67006	15984	63158	--	1308	147456

Sources:
1. Table 15, Southwest Florida Regional Hurricane Evacuation Study
2. Table 4, Appendix D, Behavorial Survey Analysis
3. Tables 7 through 11, Appendix J, Shelter Needs, Shelter Assignments

TABLE 3.10

REGIONAL SCENARIO 10 (revised 8/13/82)

	Sarasota	Charlotte	Lee	Collier	Glades & Hendry	Total
Pop. Subject to Evacuation	--	27343	202368	85746	7116	322573
No. of People Leaving County (.34 of Row 1)	--	9297	68805	29154	2420	109676
No. of People Desiring Shel. (.45) of Row 1)	--	12304	91066	38586	3202	145158
No. of People Not Finding Shelter in County	--	--	87093	34348	--	121441
Excess Capacity in Other Counties	--	--	335 (26312)*	185	--	520 (26832)*
Evac. Pop. Out of Region (Row 2 + 4 - 5)	--	9296	155563	63317	2420	230596
Evacuees entering regions other than CFRPC and WRPC	--	--	13111	22206	1112	36429
TOTAL	--	9296	142452	41111	1308	194167

Sources:
1. Table 15, Southwest Florida Regional Hurricane Evacuation Study
2. Table 4, Appendix D, Behavorial Survey Analysis
3. Tables 7 through 11, Appendix J, Shelter Needs, Shelter Assignments

*Spaces available in Charlotte and Sarasota Counties if all shelter facilities are open to evacuees from other coastal counties

TABLE 3.11

REGIONAL SCENARIO 11 (revised 8/13/82)

	Sarasota	Charlotte	Lee	Collier	Glades & Hendry	Total
Pop. Subject to Evacuation			106702	89755	7116	203573
No. of People Leaving County (.34 of Row 1)			36279	30517	2420	69216
No. of People Desiring Shel. (.45) of Row 1)			48016	40390	3202	91608
No. of People Not Finding Shelter in County			--	36152	--	36152
Excess Capacity in Other Counties			--	520 (26844)*	--	520
Evac. Pop. Out of Region (Row 2 + 4 - 5)			36279	66484	2420	105183
Evacuees entering regions other than CFRPC and WRPC			3054	23324	1112	27490
TOTAL			33225	43160	1308	77693

Sources: 1. Table 15, Southwest Florida Regional Hurricane Evacuation Study
2. Table 4, Appendix D, Behavorial Survey Analysis
3. Tables 7 through 11, Appendix J, Shelter Needs, Shelter Assignments

*Number of spaces available to evacuees if shelter facilities are opened in Lee, Charlotte and Sarasota Counties.

TABLE 3.12

REGIONAL SCENARIO 12 (revised 8/13/82)

	Pasco	Pinellas	Hillsborough	Manatee	Other Counties	Total
Total Evacuation Population	15028	100721	55884	20975	See Next Table	460568
Evacuation Pop. Entering Withlacoochee Region	15028	62959	27509	--	--	131186
No. of People Desiring Shelter	7439	21280	10618	--	--	39337
Evacuation Pop. Entering Central Florida Region	--	37762	28375	20975	See Next Table	355112
No. of People Desiring Shelter	--	12673	10953	7132	See Next Table	30758 (4 cntys only)

TABLE 3.12 (continued)

REGIONAL SCENARIO (revised 8/13/82)

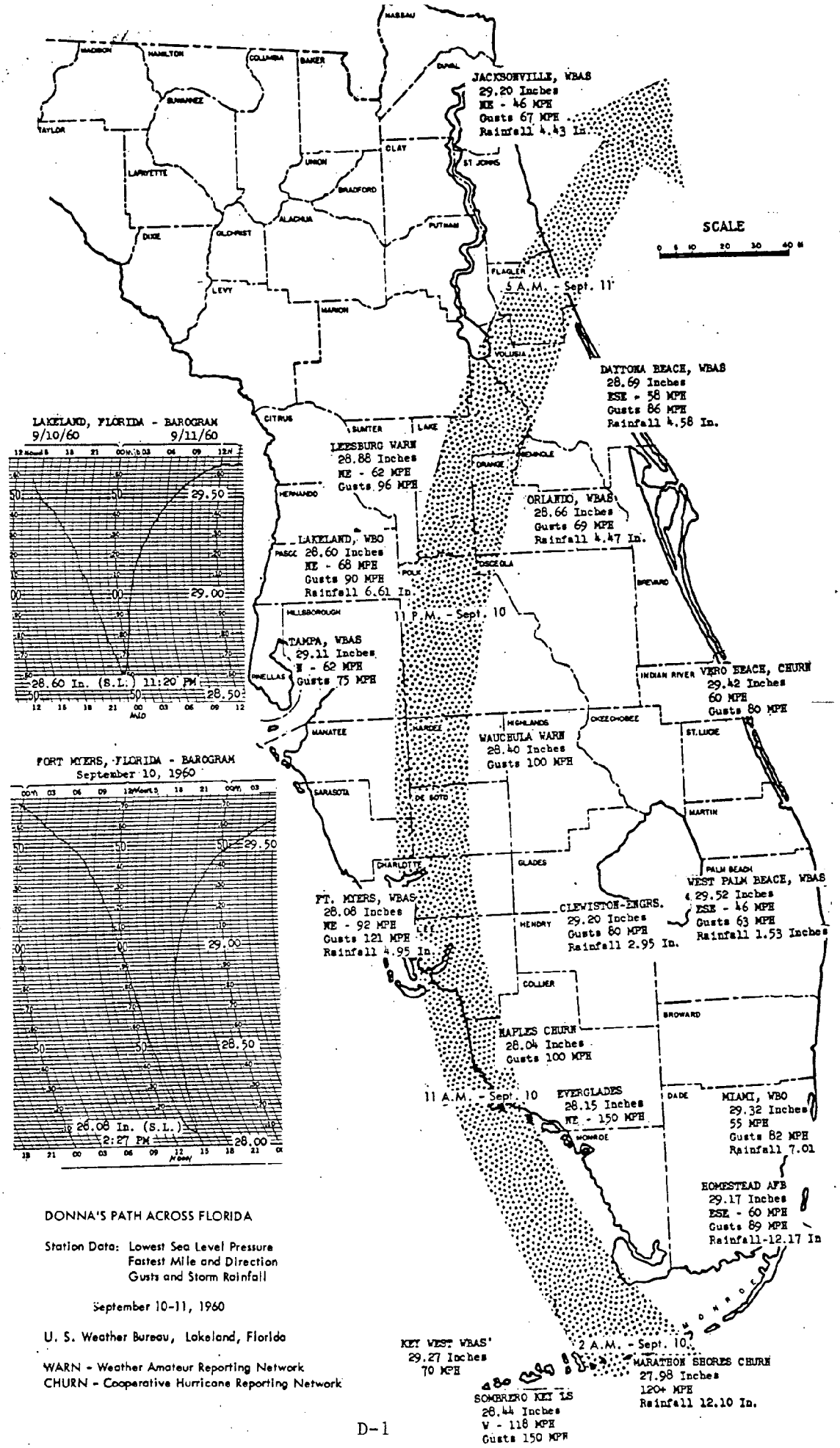
	Sarasota	Charlotte	Lee	Collier	Glades & Hendry	Total
Pop. Subject to Evacuation	86196	52499	204940	89755	7116	440506
No. of People Leaving County (.34 of Row 1)	29511	17850	69680	30517	2420	149978
No. of People Desiring Shel. (.45) of Row 1)	39112	23625	92223	40390	--	195350
No. of People Not Finding Shelter in County	18909	13963	87093	36152	--	156117
Excess Capacity in Other Counties	0	0	335	185	--	520
Evac. Pop. Out of Region (Row 2 + 4 - 5)	48420	31812	156438	66484	2420	305574
Evacuees entering regions other than CFRPC and WRPC	0	0	13178	23324	1112	37614
TOTAL	48420	31812	143260	43160	1308	267960

Sources:
1. Table 15, Southwest Florida Regional Hurricane Evacuation Study
2. Table 4, Appendix D, Behavorial Survey Analysis
3. Tables 7 through 11, Appendix J, Shelter Needs, Shelter Assignments

Appendix D

Track of Hurricane Donna
Across Florida

September, 1960



DONNA'S PATH ACROSS FLORIDA

Station Data: Lowest Sea Level Pressure
Fastest Mile and Direction
Gusts and Storm Rainfall

September 10-11, 1960

U. S. Weather Bureau, Lakeland, Florida

WARN - Weather Amateur Reporting Network
CHURN - Cooperative Hurricane Reporting Network

Appendix E

Behavioral Survey Analysis and Report

Development, Administration, and Analysis of a Behavioral Survey for the Central Florida Hurricane Shelter Plan

by

Carnot E. Nelson and Michael Kleiman
Department of Psychology Department of Sociology

University of South Florida

Submitted to the Central Florida Regional Planning Council

June, 1982

TABLE OF CONTENTS

	PAGE
INTRODUCTION	1
METHODOLOGY	1
Questionnaire Design	1
Sampling Design and Data Collection	2
SURVEY RESULTS	5
Household Characteristics	5
Number of Persons and Age of Oldest Person in Household	5
Need for Special Evacuation Assistance	7
Transportation Resources	8
Length of Residence in Area... and Previous Hurricane Experience	8
Evacuation Behavior	10
Anticipated Sources of Evacuation Advice	10
Anticipated Time Respondent would Evacuate	11
Vehicles to be used for Evacuation	14
Anticipated Evacuation Destinations, Locations and Routes	14
GENERAL CONCLUSIONS	19

LIST OF TABLES

TABLE #		PAGE
1	Number of Persons in Household by County (Percentage)	20
2	Number of Persons in Household for Mobile Homes and Non-Mobile Homes by County	21
3	Age of Oldest Resident by County (Percentage)	22
4	Number of Residents in Homes Where Oldest Resident 65 or Older by County (Percentage)	23
5	Age of Oldest Resident for Mobile Homes and Non-Mobile Homes by County	24
6	Type of Residence By County (Percentage)	25
7	Special Needs of Residents by County (Percentage)	26
8	Assistance Needed By County (Percent)	27
9	Special Needs of Residents and Mobile Home, Non-Mobile Homes Residence by County	28
10	Type of Vehicles and Number by County (Percentage)	29
11	Type of Vehicles, Number and Mobile Home, Non-Mobile Home Resident by County	30
12	Years Living In Five County Area By County (Percentage)	31
13	Years Living in Area and Mobile Home, Non-Mobile Home Residence by County	32
14	Previous Hurricane Experience by County (Percentage)	33
15	Previous Hurricane Experience of Mobile and Non-Mobile Home Residents by County (Percentage)	34
16	Year Around Residents by County (Percentage)	35
17	Year Around Residency and Mobile Home, Non-Mobile Home by County	36
18	From Whom Seek Evacuation Advice by County (Percent Yes)	37
19	From Whom Seek Evacuation Advice, Mobile Home and Non-Mobile Home Dwellers by County (Percent Yes)	38

LIST OF TABLES
(continued)

TABLE #		PAGE
20	When Residents Would Evacuate By County (Percentage)	39
21	When Mobile Home and Non-Mobile Home Residents Would Evacuate by County	40
22	Years Living in Area and Would Not Evacuate By County	41
23	What Would Do If Order To Evacuate But Weather Fine By County (Percentage)	42
24	What Mobile Home and Non-Mobile Home Residents Would do if Ordered to Evacuate But Weather Fine	43
25	Vehicles Used to Evacuate By County	44
26	Vehicles Used to Evacuate and Mobile Home, Non-Mobile Home Residence by County	45
27	Where Residents Would Like to Go By County (Percentage)	46
28	Where Would Go By County (Percent)	47
29	Where Would Mobile Home and Non-Mobile Home Evacuate to by County	48
30	Time in Area and Where Would Go by County	49
31	County Would Go to By County	50
32	County Would Evacuate to and Mobile Home, Non-Mobile Home by County	51
33	Most Frequently Mentioned Routes By County	52
34	Most Frequently Mentioned Routes and Mobile Home, Non-Mobile Home by County	53

APPENDICES

PAGE

A Hurricane Preparedness Questionnaire. 54

B TABLE # 1 Means, Standard Errors, and 95% Confidence Intervals for Selected Variables, Polk County 59

TABLE # 2 Means, Standard Errors, and 95% Confidence Intervals for Selected Variables, Hardee County 60

TABLE # 3 Means, Standard Errors, and 95% Confidence Intervals for Selected Variables, Okeechobee County 61

TABLE # 4 Means, Standard Errors, and 95% Confidence Intervals for Selected Variables, Highlands County. 62

TABLE # 5 Means, Standard Errors, and 95% Confidence Intervals for Selected Variables, DeSoto County 63

INTRODUCTION

The purpose of this study was to provide the Central Florida Regional Planning Council with behavioral data concerning residents' evacuation plans in the event of a hurricane. Data from this study will be used by the Council in developing an evacuation plan for the five county region (Polk, Hardee, Okeechobee, Highlands, and De Soto counties). Although not a coastal region, hurricanes preparedness is necessary for the region because of: (1) the necessity to evacuate mobile home residents because of high winds and the possibility of tornadoes, (2) the need to evacuate residents from flood prone areas and (3) the large influx of coastal residents who would flee inland if a hurricane struck the coast.

METHODOLOGY

Questionnaire Design

The Request for Proposal specified nine questions that the study needed to answer. These questions were:

1. The tendency to evacuate immediately if officially ordered by authorities even if storm conditions do not appear threatening to the resident.

2. When residents would tend to evacuate.

3. From what sources would the resident seek advice on whether and when to evacuate?

4. The desired destination of the resident when evacuating.

5. Route the evacuee would take to reach desired destination.

6. Number and type of vehicles at the place of residence.

7. How many vehicles would the household use in an evacuation?

8. Household characteristics:
   a. type of dwelling unit
   b. number of persons in household
   c. does household need transportation assistance?
   d. number of handicapped persons

9. Previous hurricane experience of resident.

Based upon these questions and the study conducted by H. W. Lochner, Inc. for the Tampa Bay Regional Planning Council, a questionnaire was developed which formed part of the proposal to conduct the study. This draft was modified after consultation with CFRPC staff and a pretest of 20 randomly chosen residents of the five county area. The final questionnaire (see Appendix A), in addition to being designed to answer the specific questions of the Request for Proposal, contained questions relating to the age of the residents, the length of time they had lived in the five county area and where residents would go if evacuated.

Sampling Design and Data Collection

The sampling design employed involved systematic sampling of residence listings in the phone directories covering the five-county area. This type of sampling is considered a close approximation to random sampling for studies such as the present one, and provides a nearly complete coverage of households because the vast bulk of households nowadays have listed phones. Sampling was done separately for each county to help ensure a sufficient sample size from the less populous counties. To help ensure a sufficient numbers of mobile home households for analysis, a slight oversample of mobile homes was effected; it is estimated that the proportion of mobile home residences in the sample was 4.0% higher than in the population. The total number of completed interviews was 1257; the number of cases upon which each of the statistics presented in this report is based are indicated in the tables in which the data are displayed.

Interviewing was done by women from the Tampa Women's Survival Center, who were trained and supervised for accuracy by the principle investigators. Phone calls to sample members were made from 9:00 A.M. to 9:30 P.M. seven days

a week to help ensure variation in which household member answered the phone. Unless a particular phone number was not a working number or otherwise was unusable, an effort was made to make four attempts to reach someone at each number, to minimize bias which might occur by completing interviews only for persons who are easy to reach. The overall interview completion rate was 78.9%; that is, 21.1% of persons reached by phone refused to participate in the survey or the interview could not be completed because the individual being interviewed was hard of hearing or ill. This completion rate is within the range typically achieved for surveys of this type.

Information from the completed questionnaires was coded by the principle investigators and by trained assistants supervised by them. Coded data were keypunched by the University of South Florida's Keypunch Services. Apparent mispunches (which were few) were identified through the use of appropriate computer analysis by the principal investigators, and those potential mispunches were checked against the survey forms and corrected if a keypunching error had occurred. The data are stored on magnetic tape so that further analyses can be undertaken to address any future questions planning agencies may have.

Several cautions which derive from the sampling methodology should be observed when interpreting the findings from the study. First, because of the oversample of mobile homes, analyses which aggregate mobile home with non-mobile home residences likely will include a larger proportion of mobile home households than is the case for the actual five-county population. However, this is not expected to be a major biasing factor for most analyses because the oversample of mobile homes was not large (see above). A second caution which should be observed in interpreting the findings involves results which are based on small numbers of cases (the numbers of cases are indicated

in the each of report's tables). Sampling error is likely to be larger when small numbers of cases are involved than when results are derived from analyses based upon a large number of survey respondents.

So that the reader will have a better idea of the accuracy of the sampling, Appendix B contains the means, standard errors, and 95% confidence intervals for selected study variables, by county. The standard error aids judgment of the accuracy of the sampling because it helps in determining the potential degree of discrepancy between the sample mean and the population mean; in our case, between the means calculated from the data we collected and the actual means one would be able to calculate if one had complete data on everyone, rather than just a sample of persons, from each county. Information on the exact statistical procedures for estimating standard errors for studies such as ours; that is, for which the researcher has data from one sample and does not know the true population means, can be found in most good texts dealing with inferential statistics for survey research.

Another measure which helps in judging the accuracy of sampling is the 95% confidence interval. A 95% confidence interval is calculated from the sample mean and the standard error. This means that there is a 95% chance that the population mean lies within this interval.

Because of the possibility, in any sampling procedure, of discrepancy between the values observed in the sample and the true population values, users of this report or of any study based on sample data should proceed with caution when it appears that the sampling may introduce inaccuracies large enough to meaningfully bias conclusions drawn from the data. Due to the nature and complexity of the information contained in the present report, confidence intervals or related statistics are not presented for all findings in this report. However, the standard errors and confidence intervals

presented in Appendix B provide a useful guide to the degree of precision in the samples employed. Users of this report who have a need for information on the sampling accuracy relevant to particular report findings should contact the principal investigators of the study prior to employing the study results for planning decisions.

SURVEY RESULTS

This section of the report will present findings relevant to the nine questions specified in the Request for Proposal and restated under "Questionnaire Design," above. The findings are organized into two broad categories. First, demographic and household characteristics are presented. These are characteristics which help describe the nature of the people in the five-county area -- for example, what type of housing do people have, how many households consist of an elderly person living alone, and so forth. These demographic and household descriptions are important because they can help identify some of the special needs of the population in an evacuation. Second, evacuation-related findings are presented. These findings deal with such issues as individual's willingness to evacuate, the route they might take in an evacuation, and so forth.

Household Characteristics

Number of persons and age of oldest person in household. Information on household size and on the number of elderly residents is important because it can help pinpoint the number of people who would evacuate and the proportion of elderly residents who live alone. Household size varies somewhat from county to county (see Table 1). For example, about one in five (20.7%) households in Highlands county consists of a lone resident. The analogous

percentages for Polk and De Soto counties are 16.9 and 14.6, respectively, but in Hardee (9.9%) and Okeechobee (8.6%) counties less than one in ten households are comprised of a single person living alone. Breakdown of these data separately for mobile home and non-mobile home residents (Table 2) suggests only fairly small differences between these two types of residences with regard to the proportion of single person households.

The potentially critical nature of the above information is highlighted when one examines the age data. As can be seen in Table 3, for example, between 28.9% (Okeechobee county) and 44.4% (DeSoto county) of households in the five-county region include a household member age 65 or over. Furthermore, in each county a large proportion of these households consists of an elderly (over age 65) person living alone or with one other person also age 65 or older (Table 4). Combining the above information from Table 3 with that from Table 4 allows us to calculate the percentage of total households in each county which consist of an aged individual living alone or with one other person who is elderly also. These percentages are 26 for Polk, 18.3 for Hardee, 12.6 for Okeechobee county, 32.8 for Highlands, and 27.5 for DeSoto. The large number of families which contain at least one elderly individual, and especially the high proportion of households which consist of an aged person living alone or with one other person over 65, suggests that planners may wish to give extra consideration to the special needs of the aged when designing evacuation programs, planning for the operation of public shelters, and so forth. (See the discussion on special needs and Tables 7, 8, and 9 below.)

One additional aspect of households with an aged resident or residents should be mentioned. In each county, mobile homes are more likely to contain an elderly household member than are non-mobile home households (Table 5).

That this dwelling type (mobile homes) which is especially susceptible to wind damage is also especially likely to house the aged further complicates the evacuation planning. An estimate of the proportion of households in each county which are mobile homes is shown in Table 6; these percentages range from 50.0 for Okeechobee county to 16.2 for Hardee county. The reader should keep in mind, however, that these figures are slight overestimates because of the required oversampling of mobile homes.

Need for special evacuation assistance. In order to help determine the independent ability of people to evacuate, we asked whether anyone in the household would need special assistance to travel, whether outside assistance would be required to evacuate those persons, and whether transportation such as a bus or taxi would be needed. Data relevant to these questions are presented in Tables 7, 8, and 9.

Shown in Table 7 are both the proportions of households which contain someone who needs special assistance to travel, as well as the specific reasons given for the need for assistance. The percentages of households with such needs are 8.6 for Polk, 11.3 for Hardee, 5.3 for Okeechobee county, 9.2 for Highlands, and 5.1 for DeSoto. The percentages of households for which outside assistance would be needed, due to the handicaps in Table 7, for evacuation are 5.5 for Polk, 7.7 for Hardee, 3.3 for Okeechobee county, 7.5 for Highlands, and 2.2 for DeSoto (Table 8). Outside assistance in the form of bus or taxi transportation will also be needed for some households; the percentages of households which need assistance of this type are, for the above counties, respectively, 2.8, 2.8, 3.3, 5.2, and 1.5 (Table 8). These data are disaggregated in Table 9 so that the percentages are calculated separately for mobile home and non-mobile home dwellers.

Transportation resources. Survey respondents were asked to specify the number of cars and trucks in the household, and to indicate the types of vehicles owned (sedan, station wagon, jeep, pickup truck, or van). This information is presented in Table 10 and is decomposed for mobile home and non-mobile home residents in Table 11.

The data from this portion of the survey are consistent with that regarding needs for evacuation assistance (see above) in suggesting that only a small proportion of households is without household-owned transportation. For example, the proportions of households with no vehicle range from 5.2% in Highlands county to 2.6% in Okeechobee county. Furthermore, these percentages are, for each county except Highlands, higher than those indicating the proportion of persons needing transportation such as a bus or taxi (see Table 8). These results imply that members of some households with no vehicle may be able to get transportation from a neighbor or friend. In any event, the vast bulk of households have at least one vehicle, and when one considers that few households contain more members (see Table 1) than can fit in a typical car or truck, it becomes clear why so few households specify a need for bus or taxi transportation.

Length of residence in area, seasonal residence, and previous hurricane experience. Length of residence in the area can be an important factor in a hurricane because persons who are relative newcomers may not be familiar with the local civil defense system, public shelter network, roads, and other elements crucial to a successful evacuation effort. As can be seen in Table 12 at least one out of ten persons in each county has lived in the region for four years or less; for Okeechobee county and Highlands county the proportions are almost one in four (23.7%) and close to one in three (29.9%), respectively. Inspection of Table 13 reveals that the "typical" mobile home

dweller is likely to have more recently settled in the area than is the case for his non-mobile home counterpart. In each county, the median number of years in the area is lower for mobile home residents than for non-mobile home residents.

It will also be useful in developing an evacuation plan to know how many persons have experienced a hurricane previously, and how many have been evacuated. This type of information provides yet another indication of the extent of the public's inexperience with hurricane evacuations. As can be seen in Table 14, the vast majority of the region's residents have never been evacuated due to a hurricane. The county with the highest proportion (21.7%) of residents which have experienced an evacuation is Okeechobee. And, about one in three (32.9%) of Okeechobee respondents said they had experienced Hurricane Frederick in 1979. With regard to the other counties, much smaller percentages of residents than is the case for Okeechobee have been evacuated, and the most common hurricane experience involved Hurricane Donna, which occured more than twenty years ago, in 1960. It would seem, then, that experience with previous hurricanes and hurricane evacuations is not widespread in the five-county region, and thus planners will not be dealing with a populace which has had widespread direct familiarity with hurricane conditions.

The breakdown of these results by residence type (Table 15) shows some interesting patterns. In all counties except De Soto, mobile home residents are less likely than non-mobile home residents to have been in a hurricane. Yet in three of the five counties, mobile home residents are more likely to have been evacuated. These data are consistent with findings to be presented later (Tables 21 and 23) which will show that mobile home residents are more likely than non-mobile home residents to say they will evacuate, will evacuate

immediately upon an evacuation order if the weather were fine, and will leave before an official order if a hurricane were to make landfall. These various findings suggest that mobile home residents may be aware of the particular dangers a hurricane will pose for them and are by and large willing to evacuate, and to do so in short order, if the need arises.

Tables 16 and 17 show that most residents of the region are year-round residents. It is important to note, however, that for several counties the proportion of mobile home residents who are seasonal is high. For example, 20.1% of mobile home residents in Polk county are seasonal, and the analogous figures for Highlands and De Soto counties are 17.9% and 15.1%, respectively. As might be expected, the bulk of these seasonal residents are "snowbirds" who are here from November/December to April/May.

Evacuation Behavior

The information presented thus far has concerned the household and demographic characteristics of the residents of the five county region. Of more direct concern is the anticipated behavior of those residents in an evacuation. The present section of this report will present selected findings relevant to the prediction of evacuation behavior. These findings will address the issues of (1) the sources from which individuals will seek evacuation advice, (2) if and when residents will evacuate, (3) the vehicles they will use to evacuate, and (4) the desired and anticipated shelters, and their locations, to which evacuation will occur, as well the roadways which evacuees will use to travel to those locations.

Anticipated sources of evacuation advice. Survey respondents were asked from whom they would seek advice on whether and when to evacuate. Four sources--neighbor, friend, local government or law enforcement officials, and

National Weather Service advisories on radio or television -- were presented to the persons interviewed, who were encouraged to specify all sources from which they would seek information. As can be seen in Table 18, for each county more than 9 out of every 10 respondents specified National Weather Service advisories as a source from which they would seek evacuation advice. These percentages are high for both non-mobile home and mobile home residents (Table 19). These results suggest that, while ideally all available media should be employed to ensure that publicity of an evacuation reaches as many persons as possible, from the standpoint of efficiency or in a situation of limited resources National Weather Service advisories may provide the most effective single source for disseminating evacuation information.

Anticipated time respondent would evacuate. Persons interviewed were asked, "If a hurricane were to hit the coast when, if ever, would you evacuate: (a) before an official order to do so, (b) when given the official order to do so, or (c) would not evacuate." Individuals who indicated that they would evacuate before an official order to do so were asked how soon before the hurricane was expected to hit the coast they would leave, and persons who said they would leave when given the official order to do so were asked how soon, assuming everyone were home, they would be ready to leave.

Results for these survey items are presented in Table 20 for all types of residences combined, and separately for mobile homes and non-mobile homes in Table 21. The percentages of respondents who would not evacuate even if given an official order to do so range from 9.9 (for Okeechobee county) to 24.1 (for Hardee county), although in each county the proportion of mobile home residents who say they would not evacuate is much lower than the analogous percentage for non-mobile home residents (Table 21). The fact that at least roughly one in ten respondents, and as high as almost one in four persons

interviewed (in Hardee county), said they would not evacuate suggests that evacuation orders should stress the necessity of evacuating and perhaps be worded in such a way that persons understand the risks involved in failing to evacuate.

In this regard, one important factor which helps identify those persons who are reluctant to evacuate is long-term residence in the five county area (Table 22). In three of the five counties studied, respondents who have resided in the area for 30 years or more are substantially more likely than are their neighbors who are more recent arrivals to say they will not evacuate. For those three counties (Polk, Hardee, and Highlands) evacuation personnel may wish to try to orient evacuation announcements toward these "old timers," if possible.

Most respondents, however, indicated that they would evacuate, and the most frequently stated time of evacuation, for both mobile home and non-mobile home dwellers, is when given the official evacuation order rather than before such an order is issued. Yet, it should be stressed that in general mobile home residents exhibit substantially greater evacuation readiness than do their non-mobile home counterparts (Table 21). As stated above, mobile home dwellers are more likely to evacuate, and they also are more likely to evacuate before an official order than are non-mobile home residents. Regardless of residence type, the data suggest that, typically, individuals will be ready to leave almost immediately, assuming everyone is home. In no category in Table 20 or Table 21 is the median time needed to be ready to leave over one hour. These results suggest that residents of the five-county region do not feel that they will need a long time period to pack up or otherwise put things in order, and that delays of this type are not likely to be a problem in a hurricane evacuation in this area. The reader should

remember, however, that the survey question assumes that all household members are home, and that a substantial proportion of individuals surveyed say they will not evacuate at all (see discussion above).

The information in Tables 20 and 21 can serve as a rough guide for planners and others in estimating the time sequencing of demands on roadways, shelters, and the like in the event of an evacuation. What these data provide is a means for estimating the numbers of people who will evacuate before an evacuation order, and how long before that order those persons will evacuate; the numbers of individuals who will leave when the evacuation order is forthcoming and how soon those persons would be ready to leave; and the numbers of individuals who would not evacuate at all. This type of information can be critical in judging the gradualness or suddenness of the "phase-in" of traffic build-up, need for special evacuation assistance, influx to public shelters, and so forth. However, it should be stressed that these data should be employed in a judgmental sense rather than as an exact predictive model. The reason for this is that the phase-in may diverge from that suggested by Tables 20 and 21 as the conditions associated with the particular hurricane vary. For example, it seems reasonable to assume that more people would evacuate before an official evacuation order if the order were given very late and the weather appeared very ominous, than if the evacuation were given early on and the weather were fine.

To get a perspective on this particular issue, we asked what respondents would do if told to evacuate but the weather were fine. Between 62.7% and 78.4% of persons in each county said they would leave immediately (Table 23), and, except for Okeechobee county, mobile home residents are more likely than non-mobile home residents to do so (Table 24). Additional details are available from Tables 23 and 24.

Vehicles to be used for evacuation. Data concerning the number and types of vehicles which survey respondents anticipate they would use if they were to evacuate are shown in Tables 25 and 26. Perhaps the most relevant point here relates to the proportions of respondents who specified that two or more vehicles would be employed. These proportions are generally low for both mobile home and non-mobile home dwellers. This finding jibes with the information on household size (Tables 1 and 2) presented earlier, and that regarding number of vehicles per household (Tables 10 and 11), which suggests that the vast bulk of households have a vehicle and are small enough that all household residents probably can fit in that vehicle. The likelihood that the overwhelming majority of households will use one vehicle to evacuate can be used in conjunction with data from Tables 20 and 21 (when they would evacuate) to help judge the extent of traffic in an evacuation. Again, however, this information should be used in a judgmental sense because such factors as the number of persons who would not evacuate may change with specific conditions (for example, the weather) associated with a particular hurricane.

Anticipated evacuation destinations, locations, and routes to be taken. Persons interviewed were asked both where they would like to go if evacuated and where they would go. Responses were sought both in terms of the type of evacuation destination (public shelter, friend or relative, or motel), its geographic location, and the major streets and highways respondents would use to travel to the destination.

Data on respondents' desired evacuation destinations are given in Table 27. The most frequently mentioned such destination is a public shelter. Around half the persons interviewd from each of the three counties Polk (49.4%), Hardee (51.2%), and Highlands (54.4%) specified this type of facility; the analogous percentages for Okeechobee and De Soto counties are

39.6 and 58.5, respectively. Planners thus should keep in mind that in an evacuation in these five counties, demand for public shelter space may be very high, and that the public shelter system may well be asked to accommodate between four and six out of every ten households. In this regard, it should also be noted that the vast bulk of households (between 89.6% and 98.6%) may want to use a public shelter in the county of residence rather than in another county.

Besides public shelters, the next most frequently mentioned desired evacuation destinations, in order of frequency of mention, are "friend" and "motel". Roughly one-fifth to one-third of respondents specified friend, and about one-tenth to one-fifth of persons interviewed mentioned motel. It is worth noting that evacuees are more likely to desire to travel out of county to reach these two types of destinations; this is especially true for Hardee county residents desiring to go to a motel. It should also be mentioned that between 8.1% (for Hardee county) and 16.6% (for Polk county) of survey respondents indicated that they do not know what type of shelter they would like to travel to in an evacuation. Additional details on desired evacuation destinations and locations are available from Table 27.

It is perhaps worth stressing again the heavy demand on public shelters which may be likely to occur in an evacuation. Not only do many people state outright they would want to go to a public shelter (see above), it is also true that among respondents who said they would want to go to a friend or relative, for each county more than half specified the location of the friend or relative as within the same county as that in which the person being interviewed resides. Of course, it is possible or perhaps even likely that the friend or relative that the survey respondent had in mind when answering would himself have to evacuate. In such a case, the friend or relative would

not constitute a viable evacuation destination, and such evacuees may show up at a public shelter (a motel may also not be a suitable location for the same reason).

The above data on persons' desired destinations parallel those regarding where respondents feel they would go (Tables 28 and 29), at least as far as the ordering of frequency of mention of destinations is concerned. That is, the most frequently mentioned destination remains public shelter, followed by friend or relative and motel in that order. This pattern holds both for all residents and separately for mobile home dwellers and non-mobile home residents. However, mobile home residents (except those in Polk county) are somewhat more likely to say they would go to a public shelter than are their non-mobile home counterparts, and are somewhat more likely to know what shelter type (public shelter, friend or relative, or motel) they would seek (again, Polk county is the exception). In general, as might be expected, respondents were more likely to say they don't know where they would go (Tables 28 and 29) than to say they don't know where they would like to go (Table 27).

If we assume that respondents who indicate they do not know where they would go will end up at a public shelter, the proportion of evacuees who will have to be taken care of by public shelters ranges from 82.1% in Highlands to 59.9% in Okeechobee County.

One finding from Table 28 which planners will want to heed involves the large proportions of persons who say they would go to a public shelter, who do not know where that public shelter is located. These proportions range from 38.8% (Polk) to 83.6% (De Soto). One possibility here is that individuals know which facilities are likely to be used as public shelters but do not know which particular shelter they would use. But another possibility is that

people do not know the locations of their public shelters or likely public shelters at all. Thus, planners fruitfully might give some thought to providing clear and intensive information about public shelter locations prior to a potential hurricane landfall, to ensure that confusion about where the public shelters are located is kept to a minimum during the actual evacuation. As a possible aid in such publicity efforts, Table 30 disaggregates information on where people would go by number of years of residence in the five-county area.

In addition to knowing the types of facilities people would seek out in an evacuation, it will be useful to know how many individuals feel they will travel out-of-county or out-of-state. Information of this sort for each facility type and with regard to where individuals would like to go is presented in Table 27 and was summarized briefly above. Tables 31 and 32 show these results aggregated for all facilities and with regard to where persons say they would go. All three of the tables just mentioned suggest that people generally will travel within their county of residence rather than going out-of-state or out-of-county. This pattern holds both for all dwelling types as a group, and separately for mobile homes and non-mobile homes. But, between 31.9% (Okeechobee county) and 12.2% (De Soto county) of residents do expect to travel beyond their county line, and evacuation personnel may wish to use the information in Tables 31 and 32 to estimate the amount and directions of inter-county travel. However, these data should be used as a rough guide only, in conjunction with the specifics of the particular threatening hurricane. For example, although 11.0% of Hardee respondents said they would evacuate to Polk county, that figure may be lessened if weather reports are forecasting extensive damage in the Polk area. As a last observation regarding Tables 31 and 32, it is interesting to note how many

respondents specified they would go out-of-state (including Georgia) or "north". For all counties except De Soto, roughly one out of ten persons interviewed so responded. Interestingly, for DeSoto the comparable figure is only 2.4%.

Tables 33 and 34 show the most frequently mentioned routes respondents said they would take in an evacuation. For Polk county residents, routes 60 (18.0% mentioned this route) and 27 (22.8%) may experience heavy travel, as to a lesser extent may route 98 (8.8%), I-4 (6.0%) and I-75 (11.2%). Hardee county residents say they will use routes 17 (31.3%), 64 (11.9%) and 27 (8.9%). For Okeechobee county, a variety of roadways were mentioned, most commonly routes 441 (37.4%) and 70 (18.7%). Highlands county residents overwhelmingly say they will use route 27 (45.9%), along with local roads (43.2%), and some will use I-75 (9.4%). De Soto county residents mentioned two routes most frequently: 17 (35.2%) and 70 (25.3%). It should be noted that in addition to the routes mentioned above, in all counties local roads are likely to be fairly heavily traveled. The percentages of respondents who mentioned local roads are 28.8 for Polk, 47.8 for Hardee, 12.1 for Okeechobee, 43.2 for Highlands, and 30.1 for De Soto.

In using these results for planning purposes, two things should be kept in mind. First, as with some of the other data presented in this report (see above), road usage may vary somewhat with the particulars of the hurricane involved. Second, it is likely that many individuals mentioned the most major routes they might use. Planners should be sensitive as well to the possibilities for heavy traffic problems on more minor routes, such as short access roads leading from population centers to the more major thoroughfares shown in Tables 34 and 34.

General Conclusions

In this section we will present some of the most important highlights for plannings purposes.

1. The population in general and especially those who live in mobile homes is elderly.
2. Although a relatively small percentage of the residents need special assistance to evacuate or are without transportation, in absolute numbers this could be a substantial amount of people.
3. Although a substantial percentage of the respondents indicated experience with hurricanes, this experience except for Okeechobee county was with Donna in 1960.
4. The National Weather Service is the source of advice most frequently mentioned.
5. Although most people will evacuate when ordered to do so, a substantial proportion would never evacuate and mobile home dwellers would tend to evacuate prior to the order to so.
6. If family members are home, respondents indicated they could be ready to leave almost immediately.
7. In general only one vehicle per residence will be used.
8. Most people would evacuate to public shelters within their own county. Based on these data, there will be a great demand placed on public shelters.
9. A substantial proportion of respondents do <u>not</u> know where their public shelter is.

SP134:E

Table 1

Number Persons in Household By County (Percentage)

Number	Polk (N=650)	Hardee (N=142)	Okeechobee (N=152)	Highlands (N=174)	DeSoto (N=137)
	County				
1	16.9	9.9	8.6	20.7	14.6
2	42.0	33.8	44.7	51.1	45.3
3	18.6	23.2	21.2	11.5	17.5
4	13.5	13.4	16.4	13.8	13.9
5	6.0	11.3	5.9	1.1	5.8
6 or more	2.9	8.4	2.8	1.7	2.9

Table 2

Number of Persons in Household for
Mobile Homes and Non-Mobile Homes by County

	County									
	Polk		Hardee		Okeechobee		Highlands		DeSoto	
Number	MH (N=159)	NMH (N=491)	MH (N=23)	NMH (N=119)	MH (N=76)	NMH (N=76)	MH (N=39)	NMH (N=135)	MH (N=53)	NMH (N=84)
1	15.7	17.3	13.0	9.2	9.2	7.9	17.9	21.5	13.2	15.5
2	50.3	39.3	43.5	31.9	56.6	32.9	64.1	47.4	60.4	35.7
3	12.6	20.6	30.4	21.8	17.1	26.3	10.3	11.9	15.1	19.0
4	12.6	13.8	8.7	14.3	10.5	22.4	5.1	16.3	7.5	17.9
5	5.7	6.1	----	13.4	3.9	7.9	2.6	1.5	1.9	8.3
6 or more	3.2	2.8	4.3	9.2	2.6	2.6	----	1.5	1.9	3.6
Median	2.18	2.33	2.35	2.90	2.22	2.85	2.00	2.1	2.11	2.47

Table 3

Age of Oldest Resident By County (Percentage)

	County				
	Polk (N=641)	Hardee (N=141)	Okeechobee (N=152)	Highlands (N=170)	DeSoto (N=137)
24 and Under	1.2	2.1	2.6	4.2	2.2
25 - 34	11.9	10.7	7.9	8.8	8.7
35 - 44	15.1	18.4	13.2	8.8	13.2
45 - 54	14.2	19.9	21.7	5.9	15.3
55 - 64	17.4	14.1	18.7	18.8	16.1
65 - 74	26.5	19.9	19.0	24.7	29.9
75 - 84	11.5	10.6	7.9	15.9	12.4
85 and Over	1.2	4.3	2.0	2.9	2.2
Median	59.8	53.4	50.0	65.0	60.7
Percentage of residences with at least one person 65 and over	39.2	34.8	28.9	43.5	44.5

Table 4

Number of Residents in Homes Where Oldest Resident
65 or Older by County (Percentage)

	County				
Number	Polk (N=258)	Hardee (N=49)	Okeechobee (N=54)	Highlands (N=94)	DeSoto (N=61)
1	30.2	18.4	13.0	28.7	21.3
2	56.2	57.1	59.3	62.8	67.2
3	9.3	10.2	14.8	4.3	6.6
4 or more	4.3	14.3	13.0	4.3	4.9
Note: Percentage of cases where second older resident also 65 or over					
	64.2	60.0	56.5	74.6	60.4
Note: Percentage of either alone or with person 65 or over					
	66.3	52.7	43.5	75.5	61.9

Table 5

Age of Oldest Resident for Mobile Homes and Non-Mobile Homes by County

	County									
	Polk		Hardee		Okeechobee		Highlands		DeSoto	
Age	MH (N=159)	NMH (N=483)	MH (N=22)	NMH (N=119)	MH (N=76)	NMH (N=76)	MH (N=38)	NMH (N=132)	MH (N=53)	NMH (N=84)
34 and under	12.7	13.3	18.2	11.8	7.9	13.2	7.9	12.1	13.2	9.5
35 - 64	38.6	49.2	40.9	54.6	47.4	60.5	13.2	38.7	35.0	51.2
65 and over	48.7	37.5	40.9	33.6	45.7	26.3	78.9	49.2	52.8	39.3
Median	62.2	58.1	56.5	52.9	60.5	53.0	68.2	64.2	64.8	59.7

Table 6

Type of Residence By County (Percentage)

Type	County				
	Polk (N=651)	Hardee (N=142)	Okeechobee (N=152)	Highlands (N=174)	DeSoto (N=137)
Single Family	67.7	80.3	46.7	70.7	55.5
Two Family	2.0	2.1	2.6	3.4	4.4
Apartment	5.7	1.4	0.7	2.9	1.5
Mobile Home	24.4	16.2	50.0	22.4	38.7
Other	0.2	----	----	0.6	----

Table 7

Special Needs of Residents By County (Percentage)

Need	County				
	Polk (N=645)	Hardee (N=142)	Okeechobee (N=152)	Highlands (N=174)	DeSoto (N=137)
Elderly	1.8	3.5	2.6	1.1	1.5
No Car or Doesn't Drive	1.1	1.4	---	2.8	0.7
Blind	0.3	0.7	---	0.6	0.7
Walks With Cane	0.5	---	---	---	---
Arthritis	0.5	---	---	0.6	---
Parkinson's Disease	0.2	---	---	---	---
Retirement Home	0.2	---	---	---	---
Retarded	0.3	1.4	---	---	---
Paralyzed	0.2	---	---	---	---
Bad Knees or Legs	0.3	---	---	---	---
Wheel Chair Bound	0.5	0.7	1.3	0.6	0.7
Invalid	0.2	0.7	---	1.1	---
Heart Trouble & Stroke	0.5	1.4	0.7	1.7	0.7
Brain Tumor	---	---	---	---	0.7
Bad Sight & Hearing	---	---	---	0.6	---
Multiple Sclerosis	0.2	---	---	---	---
Mentally Ill	0.2	---	---	---	---
Emphysema	0.2	---	---	---	---
Diabetes	0.2	---	---	---	---
Doesn't Want to Travel	0.2	---	---	---	---
Need Oxygen	---	---	0.7	---	---
Handicapped	---	0.7	---	---	---
Not Specified	0.5	0.7	---	---	---
No Need	91.4	88.7	94.7	90.8	94.9

Table 8

Assistance Needed By County (Percent)

	County				
	Polk (N=651)	Hardee (N=142)	Okeechobee (N=152)	Highlands (N=174)	DeSoto (N=137)
Assistance Because of Handicap	5.5%	7.7%	3.3%	7.5%	2.2%
Assistance Because Need Bus or Taxi	2.8%	2.8%	3.3%	5.2%	1.5%
Number of People Who Need Assistance and Have No Car	19	4	----	6	1

Table 9

Special Needs of Residents and Mobile Home, Non-Mobile Homes Residence by County

	County									
	Polk		Hardee		Okeechobee		Highlands		DeSoto	
	MH (N=159)	NMH (N=492)	MH (N=23)	NMH (N=119)	MH (N=76)	NMH (N=76)	MH (N=39)	NMH (N=132)	MH (N=53)	NMH (N=84)
Percent with Special Needs	8.2	7.5	13.0	14.3	3.9	5.3	10.3	7.4	----	9.5
Assistance Needed Because of Handicap	6.3	5.3	13.0	6.7	3.9	2.6	7.7	7.4	----	3.6
Need Bus or Taxi	1.9	3.0	----	3.4	2.6	3.9	5.1	5.2	----	2.4

Table 10

Type of Vehicles and Number by County (Percentage)

Number	Polk (N=650)	Hardee (N=139)	Okeechobee (N=152)	Highlands (N=122)	DeSoto (N=137)
	County				
Total					
0	4.5	3.6	2.6	5.2	2.9
1	37.4	33.8	33.6	55.8	51.1
2	42.4	38.1	38.8	26.2	32.8
3	11.8	15.8	21.1	8.7	8.0
4	3.1	6.5	2.6	2.3	2.9
5 or more	1.1	2.1	1.4	1.7	2.1
Sedans					
0	13.7	27.1	20.4	17.3	19.7
1	58.2	49.3	54.6	69.4	68.6
2	23.1	20.7	23.0	10.4	9.5
3	4.0	2.9	2.0	2.3	2.2
4	0.6	----	----	0.6	----
5 or more	0.3	----	----	----	----
Station Wagons					
0	90.9	81.0	88.2	88.4	86.1
1	8.9	17.6	11.2	10.4	13.9
2 or more	0.2	----	0.7	1.2	----
Jeeps					
0	98.0	92.9	96.7	99.4	97.8
1 or more	2.0	7.1	3.3	0.6	2.2
Pick Up Trucks					
0	70.3	50.0	52.0	75.1	64.2
1	26.3	41.4	41.4	22.0	33.6
2 or more	3.5	8.5	6.6	2.9	2.2
Vans					
0	95.4	95.0	93.4	93.6	92.7
1 or more	4.6	5.0	6.6	6.4	7.3

Table 11

Type of Vehicles, Number and Mobile Home, Non-Mobile Home Resident by County

	County									
	Polk		Hardee		Okeechobee		Highlands		DeSoto	
Number	MH (N=159)	NMH (N=491)	MH (N=23)	NMH (N=116)	MH (N=76)	NMH (N=76)	MH (N=39)	NMH (N=133)	MH (N=53)	NMH (N=84)
Total										
0	1.3	5.5	----	4.3	2.6	2.6	5.1	5.3	1.9	3.6
1	50.9	33.0	56.5	29.3	47.4	19.7	69.2	51.9	69.8	39.3
2	34.6	44.6	34.8	38.8	35.5	42.1	23.1	27.1	20.8	40.5
3	11.3	12.0	8.7	17.2	10.5	31.6	2.6	10.5	3.8	10.7
4 or more	1.8	4.9	----	7.8	3.9	3.9	----	5.3	3.8	6.0
Sedans										
0	13.8	13.7	34.8	25.6	25.0	15.8	20.5	16.4	28.3	14.3
1	67.3	55.3	52.2	48.7	57.9	51.3	74.4	67.9	66.0	70.2
2	15.7	25.5	13.0	22.2	14.5	31.6	5.1	11.9	5.7	11.9
3 or more	3.1	5.5	----	3.4	2.6	1.3	----	3.7	----	3.6
Station Wagons										
0	90.6	91.0	73.9	83.8	92.1	84.2	89.7	88.1	84.9	86.9
1 or more	9.4	8.8	26.1	16.2	7.9	14.5	10.3	11.9	15.1	13.1
Jeeps										
0	99.4	97.6	100.0	91.5	96.1	97.4	100.0	99.3	100.0	96.4
1 or more	0.6	2.4	----	8.5	3.9	2.6	----	0.7	----	3.6
Pick Up Trucks										
0	73.0	69.4	60.9	47.9	51.3	52.6	87.2	71.6	66.0	63.1
1 or more	27.0	30.6	39.1	52.1	48.7	47.4	12.8	28.4	34.0	36.9
Vans										
0	93.1	96.1	95.7	94.9	96.1	90.8	92.3	94.0	94.3	91.7
[illegible]	6.9	3[illegible]	[illegible]3	[illegible].1	3[illegible]	9[illegible]	[illegible]7	[illegible]	5.[illegible]	8[illegible]

Table 12

Years Living In Five County Area By County (Percentage)

Years	County				
	Polk (N=647)	Hardee (N=140)	Okeechobee (N=152)	Highlands (N=174)	DeSoto (N=137)
0 - 4	15.8	10.0	23.7	29.9	17.5
5 - 9	16.2	12.9	22.4	17.2	27.0
10 - 14	13.7	10.7	18.4	19.5	17.5
15 - 19	8.2	11.4	7.2	3.4	9.5
20 - 24	8.1	12.1	4.0	7.5	9.5
25 - 29	7.9	4.3	3.9	5.2	4.4
30 - 34	6.5	7.2	3.3	4.6	6.1
35 - 39	6.3	3.5	3.3	4.0	0.7
40 - 44	5.4	4.3	2.6	2.3	2.2
45 - 49	2.4	4.3	3.3	0.6	1.5
50 or more	9.7	19.3	7.9	5.7	5.1
Median	16.6	21.5	10.0	9.8	10.2

Table 13

Years Living in Area and Mobile Home, Non-Mobile Home Residence by County

	County									
	Polk		Hardee		Okeechobee		Highlands		DeSoto	
Years	MH (N=159)	NMH (N=488)	MH (N=22)	NMH (N=118)	MH (N=76)	NMH (N=76)	MH (N=39)	NMH (N=135)	MH (N=53)	NMH (N=84)
0 - 9	56.6	24.0	36.4	20.3	56.6	35.5	71.8	40.0	43.4	45.2
10 - 19	20.8	22.3	27.2	21.2	27.6	23.7	23.1	23.0	28.3	26.2
20 - 29	11.3	17.2	18.2	16.1	6.6	9.2	----	16.3	18.9	10.7
30 - 39	7.5	14.6	----	12.7	5.3	7.9	2.6	10.3	7.5	4.8
40 - 49	1.9	9.6	4.5	9.4	1.3	10.5	----	3.7	----	6.0
50 or more	1.9	12.3	16.6	20.3	2.6	13.2	2.6	6.7	1.9	7.1
Median	7.4	20.4	15.0	22.3	7.3	12.5	4.9	11.6	9.9	11.0

Table 14

Previous Hurricane Experience By County (Percentage)

Percent	Polk (N=651)	Hardee (N=142)	Okeechobee (N=152)	Highlands (N-174)	DeSoto (N=137)
	County				
Yes	64.7	67.6	80.3	67.8	67.2
Donna 1960	29.3	39.4	6.6	22.4	29.2
Frederick 1979	4.1	2.1	32.9	12.6	2.2
1938 Storm	----	----	----	1.1	6.6
1964 Storm	----	----	4.6	----	----
1969 Storm	----	7.0	----	----	----
Several	1.1	4.9	9.9	5.7	4.4
Evacuated	9.1	11.3	21.7	10.9	12.4

Table 15

Previous Hurricane Experience of Mobile and Non-Mobile Home Residents by County (Percentage)

	County									
	Polk		Hardee		Okeechobee		Highlands		DeSoto	
	MH (N=159)	NMH (N=490)	MH (N=23)	NMH (N=118)	MH (N=76)	NMH (N=76)	MH (N=39)	NMH (N=135)	MH (N=53)	NMH (N=84)
Percent Yes	54.1	68.1	56.5	70.3	78.9	81.6	43.6	74.8	71.7	64.3
Donna 1960	20.8	32.1	34.8	40.3	3.9	9.2	7.7	26.7	20.8	34.5
Frederick 1979	5.0	3.9	8.7	0.8	34.2	31.6	12.8	12.6	3.8	1.2
Several	1.3	1.0	----	0.8	6.6	13.2	10.3	4.4	3.8	1.2
Evacuated	10.1	8.7	4.3	12.6	31.1	13.3	7.7	11.9	13.2	11.9

Table 16

Year Around Residents By County (Percentage)

	County				
Live Year Around	Polk (N=649)	Hardee (N=141)	Okeechobee (N=151)	Highlands (N=174)	DeSoto (N=137)
Yes	91.7	96.5	94.0	90.8	94.2
No	8.3	2.8	6.0	9.2	5.8

Table 17

Year Around Residency and Mobile Home, Non-Mobile Home by County

	County									
	Polk		Hardee		Okeechobee		Highlands		DeSoto	
Live Year Around	MH (N=159)	NMH (N=490)	MH (N=23)	NMH (N=118)	MH (N=76)	NMH (N=75)	MH (N=39)	NMH (N=135)	MH (N=53)	NMH (N=84)
Yes	79.9	95.5	91.3	98.3	90.8	97.3	82.1	93.3	84.9	100.0
No	20.1	4.5	8.7	1.7	9.2	2.7	17.9	6.7	15.1	----

Table 18

From Whom Seek Evacuation Advice By County (Percent Yes)

Whom	County				
	Polk (N=633)	Hardee (N=139)	Okeechobee (N=149)	Highlands (N-168)	DeSoto (N=131)
Neighbor	29.1	23.0	18.8	20.2	17.4
Friend	32.0	35.0	26.4	25.1	19.0
Local Government or Law Enforcement Official	66.0	72.7	60.8	58.3	56.5
National Weather Service on Radio or TV	92.7	94.2	94.0	92.3	91.7

Table 19

From Whom Seek Evacuation Advice, Mobile Home and Non-Mobile Home Dwellers by County (Percent Yes)

	County									
	Polk		Hardee		Okeechobee		Highlands		DeSoto	
Whom	MH (N=153)	NMH (N=480)	MH (N=22)	NMH (N=117)	MH (N=74)	NMH (N=75)	MH (N=36)	NMH (N=133)	MH (N=52)	NMH (N=80)
Neighbor	30.1	28.7	22.7	23.1	18.4	18.7	16.7	21.2	21.2	15.0
Friend	34.4	31.2	43.5	33.3	23.3	29.3	25.0	25.2	24.5	16.7
Local Government or Law Enforcement Official	66.0	66.0	65.2	74.1	54.1	67.6	54.1	59.5	43.4	65.4
National Weather Service on Radio or TV	94.2	92.1	100.0	93.1	94.7	93.2	97.3	90.8	96.2	88.6

Table 20

When Residents Would Evacuate By County (Percentage)

When	County				
	Polk (N=647)	Hardee (N=138)	Okeechobee (N=152)	Highlands (N=172)	DeSoto (N=135)
Before Official Order	16.1%	13.9%	27.0%	13.9%	17.0%
Median Time Before Hit Coast	2.0 Hrs	4.2 Hrs	2.3 Hrs	2.5 Hrs	2.5 Hrs
When Given Official Order	68.9%	59.9%	61.2%	62.2%	66.7%
Median Time After Order	0.3 Hrs	0.2 Hrs	0.2 Hrs	0.2 Hrs	0.1 Hrs
Percent Leaving Within 1 Hour of Receiving Order	94.1%	92.6%	94.6%	95.3%	94.4%
Would Not Evacuate	10.9%	24.1%	9.9%	18.6%	15.6%
Use Own Judgment	1.5%	2.2%	----	----	----
Do Not Know	2.6%	0.7%	2.0%	5.2%	0.7%

Table 21

When Mobile Home and Non-Mobile Home Residents Would Evacuate by County

When	Polk MH (N=159)	Polk NMH (N=492)	Hardee MH (N=22)	Hardee NMH (N=116)	Okeechobee MH (N=76)	Okeechobee NMH (N=76)	Highlands MH (N=39)	Highlands NMH (N=133)	DeSoto MH (N=53)	DeSoto NMH (N=82)
Before Official Order	32.7	10.6	27.3	11.2	34.2	19.7	20.5	12.9	20.8	14.6
Median Time Before Hit Coast	2.0 Hours	1.8 Hours	8.0 Hours	3.5 Hours	3.25 Hours	1.5 Hours	1.5 Hours	3.0 Hours	2.5 Hours	2.5 Hours
When Given Official Order	62.3	70.5	63.7	58.6	57.9	64.5	74.4	62.9	67.9	65.9
Median Time After	0.30 Hours	0.29 Hours	0.14 Hours	0.26 Hours	0.17 Hours	0.20 Hours	0.10 Hours	0.24 Hours	0.17 Hours	0.13 Hours
Percentage Leaving With One Hour	91.9	94.1	100.0	91.0	97.7	91.8	100.0	93.6	97.2	92.6
Would Not Evacuate	3.1	13.4	4.5	27.6	5.3	14.5	5.1	24.2	9.4	19.5
Use Own Judgment	1.2	0.2	----	2.8	----	----	----	----	----	----
Do Not Know	0.6	4.1	4.5	----	2.6	1.3	----	----	1.3	----

Table 22

Years Living In Area And Would Not Evacuate By County

	County				
Years In Area	Polk	Hardee	Okeechobee	Highlands	DeSoto
5 or less	2.2 (N=136)	16.7 (N=18)	8.3 (N=48)	16.4 (N=55)	16.2 (N=37)
6 - 14	11.2 (N=152)	10.7 (N=28)	12.5 (N=48)	17.0 (N=53)	16.7 (N=48)
15 - 29	8.1 (N=149)	13.9 (N=36)	4.5 (N=22)	15.4 (N=26)	13.3 (N=30)
30 and over	19.8 (N=192)	40.7 (N=54)	12.9 (N=31)	34.5 (N=29)	15.8 (N=19)

Entries: Percentage Not Evacuating
N= Total N for Particular Years in Area

Table 23

What Would Do If Order To Evacuate But Weather Fine By County (Percentage)

What Do	County				
	Polk (N=595)	Hardee (N=126)	Okeechobee (N=146)	Highlands (N=149)	DeSoto (N=125)
Leave Immediately	70.1	62.7	65.1	67.1	78.4
Wait One Hour	4.5	4.8	10.3	4.7	7.2
Wait Two or More Hours	1.8	7.1	3.4	4.7	7.2
Use Own Judgment or Do Not Know	23.5	25.4	21.2	23.5	7.2

Table 24

What Mobile Home and Non-Mobile Home Residents Would do if Ordered to Evacuate But Weather Fine

	County									
	Polk		Hardee		Okeechobee		Highlands		DeSoto	
What Do	MH (N=151)	NMH (N=444)	MH (N=21)	NMH (N=103)	MH (N=75)	NMH (N=71)	MH (N=38)	NMH (N=111)	MH (N=51)	NMH (N=82)
Leave Immediately	77.5	67.6	73.9	60.2	62.7	67.6	76.3	64.0	78.7	70.7
Wait One Hour	5.3	4.3	4.3	4.8	10.7	9.9	2.6	5.4	3.9	8.5
Wait Two or More Hours	2.6	0.9	8.7	6.8	1.3	5.6	---	6.3	10.2	4.9
Use Own Judgment or Do Not Know	16.0	26.6	8.7	28.1	25.3	16.9	21.1	24.3	8.1	6.1

Table 25

Vehicles Used To Evacuate By County

Vehicle	County				
	Polk (N=588)	Hardee (N=127)	Okeechobee (N=141)	Highlands (N=160)	DeSoto (N=129)
Sedan	72.8	52.8	46.2	72.5	65.9
Station Wagon	7.8	12.6	9.8	5.6	9.3
Jeep	1.4	2.4	0.7	0.6	----
Pick Up Truck	9.7	18.9	25.2	10.6	14.7
Van	2.6	3.1	2.8	3.8	4.6
Other	1.7	3.1	2.8	3.1	1.6
Two or More	4.1	7.1	12.6	3.8	3.9

Table 26

Vehicles Used to Evacuate and Mobile Home,
Non-Mobile Home Residence by County

	County									
	Polk		Hardee		Okeechobee		Highlands		DeSoto	
Vehicle	MH (N=159)	NMH (N=437)	MH (N=23)	NMH (N=104)	MH (N=72)	NMH (N=71)	MH (N=39)	NMH (N=126)	MH (N=53)	NMH (N=76)
Sedan	71.5	73.2	47.8	53.8	45.8	46.5	74.3	71.4	66.0	65.8
Station Wagon	7.3	8.0	21.7	10.6	6.9	12.7	5.7	5.6	11.3	7.9
Jeep	0.7	1.6	----	2.9	1.4	----	----	0.8	----	----
Pick Up Truck	9.3	9.8	17.4	19.2	27.8	22.5	8.6	11.1	13.2	15.8
Van	2.6	2.5	4.3	2.9	2.8	2.8	5.7	3.2	3.8	5.3
Other	4.6	0.7	4.3	2.9	2.8	2.8	2.9	3.2	1.9	1.3
Two or More	4.0	4.1	4.3	7.7	12.5	12.7	2.9	4.0	3.8	3.9

Table 27

Where Residents Would Like To Go By County (Percentage)

	County				
	Polk (N=609)	Hardee (N=123)	Okeechobee (N=144)	Highlands (N=149)	DeSoto (N=123)
Public Shelter	49.4	51.2	39.6	54.4	58.5
Where	(N=291)	(N=64)	(N=54)	(N=80)	(N=71)
Polk	89.6	3.1	----	----	1.4
Hardee	0.3	90.6	----	----	----
Okeechobee	----	1.6	90.7	----	----
Highlands	0.3	3.1	----	91.2	----
DeSoto	0.7	1.6	----	1.2	98.6
Other	1.0	----	----	1.2	----
Do Not Know	7.9	----	9.3	6.2	----
Friend	21.7	31.7	31.9	18.1	21.1
Where	(N=105)	(N=30)	(N=27)	(N=20)	(N=22)
Polk	64.7	13.3	----	5.0	13.6
Hardee	1.9	53.3	----	----	----
Okeechobee	----	3.3	51.8	5.0	----
Highlands	1.0	3.3	3.7	70.0	----
DeSoto	----	----	----	----	72.3
Other	14.3	3.3	22.2	10.0	4.5
Do Not Know	18.1	20.0	22.2	10.0	9.1
Motel	12.3	8.9	19.4	13.4	9.8
Where	(N=60)	(N=7)	(N=19)	(N=17)	(N=6)
Polk	48.3	14.3	----	5.9	16.7
Hardee	----	14.3	----	5.9	----
Okeechobee	----	----	36.8	----	----
Highlands	----	----	10.5	35.3	----
DeSoto	----	----	----	----	33.3
Other	16.7	28.6	5.2	11.8	----
Do Not Know	35.0	42.8	47.4	41.2	50.0
Do Not Know	16.6	8.1	9.0	14.1	10.6

Table 28

Where Would Residents Go By County (Percent)

Where	County				
	Polk (N=542)	Hardee (N=119)	Okeechobee (N=137)	Highlands (N=129)	DeSoto (N=119)
Public Shelter	47.2	36.8	35.8	52.7	46.2
Know Where It Is	38.8	67.4	57.8	56.3	83.6
Friend	13.8	25.2	21.9	11.6	16.0
Know Where It Is	73.6	69.6	81.5	61.5	70.6
Motel	9.6	4.2	18.2	5.4	5.0
Know Where It Is	67.4	60.0	68.2	66.7	66.7
Other	3.1	7.6	----	1.6	4.2
Do Not Know	25.6	26.0	24.1	29.4	28.6

Table 29

Where Would Mobile Home and Non-Mobile Home
Evacuate to by County

	County									
	Polk		Hardee		Okeechobee		Highlands		DeSoto	
Where	MH (N=137)	NMH (N=405)	MH (N=22)	NMH (N=97)	MH (N=67)	NMH (N=70)	MH (N=31)	NMH (N=98)	MH (N=49)	NMH (N=70)
Public Shelter	31.4	52.6	54.5	33.0	38.8	32.9	58.1	51.0	49.0	44.2
Friend	21.2	11.1	22.7	25.8	14.9	28.6	12.9	11.2	18.4	14.3
Motel	12.4	8.6	----	5.1	26.9	10.0	3.2	6.1	6.1	4.3
Other	5.1	3.2	4.5	8.2	----	----	3.2	1.0	2.0	5.7
Do Not Know	29.2	24.4	18.2	27.8	19.4	28.6	22.6	30.6	24.5	31.4

Table 30

Time in Area and Where Would Go by County

Years	Polk PS	Polk DKN	Hardee PS	Hardee DKN	Okeechobee PS	Okeechobee DKN	Highlands PS	Highlands DKN	DeSoto PS	DeSoto DKN
5 or less	44.3	29.6	38.9	5.6	35.6	20.0	46.8	34.0	30.0	29.4
	(N=115)		(N=18)		(N=45)		(N=47)		(N=34)	
6 - 14	35.7	32.5	32.0	24.0	31.0	26.2	51.2	34.1	50.0	31.0
	(N=126)		(N=25)		(N=42)		(N=41)		(N=42)	
15 - 29	45.9	26.3	38.2	32.4	47.6	23.8	50.0	15.0	44.0	20.0
	(N=133)		(N=34)		(N=21)		(N=20)		(N=25)	
30 and over	54.0	16.9	39.0	29.3	34.5	27.6	68.2	18.2	33.3	22.2
	(N=166)		(N=41)		(N=29)		(N=22)		(N=18)	

N = Total N for particular years in area.

PS - Public shelter.

DKN - Do not know where they would go.

Table 31

County Would Go To By County

County or State Go To	County In Polk (N=361)	Hardee (N=82)	Okeechobee (N=94)	Highlands (N=104)	DeSoto (N=82)
Polk	77.0	11.0	1.1	1.0	3.6
Hardee	0.3	69.5	----	----	----
Okeechobee	----	----	68.1	1.0	----
Highlands	----	2.4	3.2	81.7	----
DeSoto	0.6	----	----	1.1	87.8
Georgia	5.0	6.1	6.4	----	2.4
Out of State North	5.3	4.9	5.3	9.6	----
Orange	1.4	2.4	----	1.9	----
Alachua	----	----	----	1.9	----
Central Florida	----	----	2.1	----	----
Far Away	1.1	----	2.1	----	----
Palm Beach	----	----	2.1	----	----
North Carolina	0.8	----	----	----	----
Marion	0.8	----	----	----	----
Illinois	1.1	----	----	----	----
Oceola	0.8	----	----	----	----

Table 32

County Would Evacuate to and
Mobile Home, Non-Mobile Home by County

County or State Go To	County: Polk MH (N=95)	Polk NMH (N=266)	Hardee MH (N=14)	Hardee NMH (N=68)	Okeechobee MH (N=55)	Okeechobee NMH (N=39)	Highlands MH (N=31)	Highlands NMH (N=73)	DeSoto MH (N=34)	DeSoto NMH (N=49)
Polk	75.8	77.4	14.3	10.3	1.8	----	----	1.4	2.4	4.1
Hardee	----	0.4	78.6	67.6	----	----	----	----	----	----
Okeechobee	----	----	----	----	70.9	64.1	----	1.4	----	----
Highlands	----	----	----	2.9	1.8	5.1	80.6	82.2	----	----
DeSoto	----	----	----	----	----	----	----	1.4	85.3	87.8
Georgia	3.2	5.6	7.1	5.9	5.5	7.7	----	----	----	4.1
Out of State	3.2	6.0	----	5.9	5.5	5.1	12.9	8.2	4.5	----
North	----	----	----	----	----	----	----	----	----	----

Table 33

Most Frequently Mentioned Routes By County

Route	County				
	Polk (N=250)	Hardee (N=67)	Okeechobee (N=91)	Highlands (N=74)	DeSoto (N=71)
60	18.0	----	----	----	----
27	22.8	8.9	12.1	45.9	----
I-4	6.0	----	----	----	----
Local Streets	28.8	47.8	12.1	43.2	30.1
I-75	11.2	----	7.7	9.4	7.0
98	8.8	----	8.9	----	----
37	4.0	----	----	----	----
64	----	11.9	----	----	----
17	----	31.3	----	----	35.2
70	----	----	18.7	----	25.3
441	----	----	37.4	----	----
Turnpike	----	----	6.6	----	----
710	----	----	6.6	----	----
31	----	----	----	----	7.0

Table 34

Most Frequently Mentioned Routes and
Mobile Home, Non-Mobile Home by County

Route	Polk MH (N=68)	Polk NMH (N=182)	Hardee MH (N=14)	Hardee NMH (N=53)	Okeechobee MH (N=46)	Okeechobee NMH (N=45)	Highlands MH (N=22)	Highlands NMH (N=52)	DeSoto MH (N=29)	DeSoto NMH (N=38)
60	25.0	15.4	----	----	----	----	----	----	----	----
27	27.9	20.8	----	9.4	13.0	17.7	45.5	46.1	----	----
I-4	4.4	6.0	----	----	----	----	----	----	----	----
Local Streets	25.0	29.1	35.7	50.9	8.7	15.5	54.5	38.5	34.4	36.8
I-75	11.7	11.0	----	----	8.7	----	----	----	----	7.9
98	----	----	----	----	10.9	6.7	----	----	----	----
37	2.9	4.4	----	----	----	----	----	----	----	----
64	----	----	14.3	11.3	----	----	----	5.8	----	----
17	5.8	2.2	28.6	32.1	----	4.4	----	----	27.6	44.7
70	----	----	----	----	26.0	11.1	----	----	37.9	18.4
441	----	----	----	----	34.8	40.0	----	----	----	----
Turnpike	----	----	----	----	----	13.3	----	----	----	----
710	----	----	----	----	10.9	----	----	----	----	----
31	----	----	----	----	6.5	----	----	----	----	----

Appendix A

HURRICANE PREPAREDNESS QUESTIONNAIRE

Name_____ Interviewer Code No. ____

Address_____ Respondent Code No. ____

Phone No. _____

	1	2	3	4
Date of Attempt				
Time of Attempt				
Result of Attempt				

Person and Time to call back _____

Hello, I am _____ of the University of South Florida. We are doing a study for the Central Florida Regional Planning Council regarding peoples' plans for hurricane evacuation. I hope that you will answer the few questions we need to ask so that evacuation plans can be developed. All your responses will remain anonymous in that after the data are coded all identifying information will be destroyed.

Is this Mr. or Ms. _____?
If no, do you live at this residence? yes__ no__
If yes, continue. If no, find out when residents will be there.

1. What type of home do you live in?

__single family house

__two family house

__apartment

__mobile home

2. How many persons live in your house or apartment? _____

   What are their ages? _____ _____ _____ _____ _____

   Does anyone in your home have special transportation needs or need special assistance to travel . . . for example is anyone handicapped or elderly?

   __yes __no

   If yes, why do they have special needs? _____

   _____

   Would you need outside assistance to evacuate them?

   __yes __no

3. How many cars or trucks are there in your household? _____

   What kinds of vehicles are they?

   sedan__ station wagon__ Jeep__ pickup truck__ van__

   other (specify) _____.

   (If zero to question 3): Would you need transportation such as a bus or taxi?

   yes__ no__

4. If you were to evacuate, which of the vehicles would you use?

   Specify_____.

5. From whom would you seek advice on whether and when to evacuate?

Neighbor:

yes__ no__

Friend:

yes__ no__

Local government or law enforcement officials:

yes__ no__

National Weather Service advisories on radio or TV:

yes__ no__.

6. If a hurricane were to hit the coast when, if ever, would you evacuate?

a. ___ Before an official order to do so.

b. ___ When given the official order to do so.

c. ___ Would not evacuate.

(If a.) How soon before the hurricane was expected to hit the coast would you leave? _____ hours.

(If b.) Assuming everyone is home, how soon would you be ready to leave? _____ hours.

7. What would you do if told to evacuate but the weather was fine outside? (e.g., wait, leave immediately). If wait, when would you leave? _____ hours (0 hours for leave immediately)

8. If you evacuated, where would you like to go?

____ Public shelter in the five-county area (DeSoto, Hardee, Polk, Highlands, Okeechobee) (If yes, in which county? _____)

____ Friend or relative (if yes, where do they live? _____ city and county)

____ Motel (if yes, where _____ city and county)

____ Don't know (Do not say this)

9. If you evacuated, where would you go? _____ (city and county, also record don't know)

Do you know where that is?

yes___ no___ (If no, go to question 11).

10. What route would you take to get there, especially major streets and highways? _____

_____.

11. How long have you lived in the five-county area? _____

12. Do you live here all year round?

yes__ no__

If no, during what months do you live here? _____

13. Have you ever been in a hurricane?

yes__ no__

If yes, where and when _____

Have you ever been evacuated because of a hurricane?

yes__ no__

Thank you for your help.

SP26:P

Appendix B

TABLE 1

Means, Standard Errors, and 95% Confidence Intervals for Selected Variables, Polk County

Variable	$\bar{X}$	Standard Error	Confidence Interval
Number of household residents	2.60	0.05	2.50- 2.70
Age of oldest household resident	56.45	0.66	55.16-57.74
Total number of vehicles in household	1.75	0.04	1.67- 1.83
Time in hours would leave before expected landfall	8.31	1.89	4.61-12.01
Time in hours to be ready to leave, assuming everyone home	0.84	0.27	0.30- 1.38
Time to leave if told to evacuate but weather fine	0.91	0.10	0.71- 1.11
Years of residence in the five-county area	21.46	0.68	20.13-22.80

Appendix B

TABLE 2

Means, Standard Errors, and 95% Confidence Intervals for Selected Variables, Hardee County

Variable	$\overline{X}$	Standard Error	Confidence Interval
Number of household residents	3.14	0.13	2.89- 3.39
Age of oldest household resident	55.03	1.44	52.21-57.85
Total number of vehicles in household	1.96	0.09	1.78- 2.14
Time in hours would leave before expected landfall	14.77	7.2	0.66-28.88
Time in hours to be ready to leave, assuming everyone home	0.40	0.07	0.26- 0.54
Time to leave if told to evacuate but weather fine	1.69	0.26	1.18- 2.20
Years of residence in the five-county area	27.01	1.74	23.60-30.42

Appendix B

TABLE 3

Means, Standard Errors, and 95% Confidence Intervals for Selected Variables, Okeechobee County

Variable	$\bar{X}$	Standard Error	Confidence Interval
Number of household residents	2.80	0.11	2.58- 3.02
Age of oldest household resident	55.70	1.28	53.19-58.21
Total number of vehicles in household	1.93	0.08	1.77- 2.09
Time in hours would leave before expected landfall	6.57	1.73	3.18- 9.96
Time in hours to be ready to leave, assuming everyone home	0.33	0.06	0.21- 0.45
Time to leave if told to evacuate but weather fine	1.14	0.21	0.73- 1.55
Years of residence in the five-county area	16.68	1.37	13.99-19.37

Appendix B

TABLE 4

Means, Standard Errors, and 95% Confidence Intervals for Selected Variables, Highlands County

Variable	$\bar{X}$	Standard Error	Confidence Interval
Number of household residents	2.39	0.14	2.12- 2.66
Age of oldest household resident	61.08	1.27	58.59-63.57
Total number of vehicles in household	1.52	0.07	1.45- 1.59
Time in hours would leave before expected landfall	8.15	2.23	3.78-12.52
Time in hours to be ready to leave, assuming everyone home	1.04	0.65	0.00- 2.31
Time to leave if told to evacuate but weather fine	1.59	0.23	1.14- 2.04
Years of residence in the five-county area	15.17	1.14	12.94-16.31

Appendix B

TABLE 5

Means, Standard Errors, and 95% Confidence Intervals for Selected Variables, DeSoto County

Variable	$\overline{X}$	Standard Error	Confidence Interval
Number of household residents	2.61	0.11	2.39- 2.83
Age of oldest household resident	57.45	1.40	54.71-60.19
Total number of vehicles in household	1.66	0.09	1.48- 1.84
Time in hours would leave before expected landfall	6.67	2.08	2.59-10.75
Time in hours to be ready to leave, assuming everyone home	0.29	0.06	0.17- 0.41
Time to leave if told to evacuate but weather fine	0.66	0.16	0.35- 0.97
Years of residence in the five-county area	15.62	1.29	13.09-18.15

Appendix F

Examples of Letters to Owners of Alternate Shelters

P O L K C O U N T Y

P.O. BOX 1336 PUBLIC SAFETY DIVISION
BARTOW, FLORIDA 33830

PUBLIC SAFETY COUNCIL
BRENDA TAYLOR
FRANK SMITH, JR.
JACK SIMMERS
ERNIE CALDWELL
ROYCE READY

HEADQUARTERS
BLDG. 410
BARTOW AIR BASE
PHONE 533-7161
G. WES GUNN, DIRECTOR

Dear

Early results of a hurricane shelter study conducted by the Central Florida Regional Planning Council show a deficit of shelter spaces in this county to house evacuees in a major hurricane. The county's primary shelters, mostly public schools, simply cannot accommodate all of our mobile home residents, as well as those who live in flood-prone areas, plus evacuees from coastal areas who will enter this county during a hurricane. Moreover, we cannot look to other central Florida counties for help, becaus the same situation exists elsewhere.

We are very concerned about this lack of shelter space because it means an increased ri to lives and property due to increased traffic on our roads and increased confusion as evacuees seek shelter.

With the help of the Regional Planning Council, law enforcement officials and others, w are trying to identify additional shelter space to ease this burden. We are asking you and others in our business and religious communities if we can count on the availabilit of at least a portion of your building to be used as shelter during a hurricane. You m be interested in knowing that Chapter 252.51, Florida Statutes, states that private businesses serving as shelters cannot be held liable for accidents or injury.

Please contact any of us if you can assist in this important project. In the meantime, thank you for your attention. Sincerely,

G. Wes Gunn
Polk County Public Safety Director
Polk County Commission

Grace Stiner
Ridge Area Chapter
American Red Cross

Nola E. Osborn
Greater Lakeland Chapter
American Red Cross

GWG/GS/NEO/do

AMBULANCE DEPT.
DALE E. DAVIS, DIRECTOR

CIVIL DEFENSE DEPT.
CARL L. ALECK, EXEC. DIRECTOR

FIRE-RESCUE DEPT.
HARRY T. CARTER, CHIEF

HARDEE COUNTY

BOARD OF COUNTY COMMISSIONERS

Rm. A-204, Courthouse Annex
412 West Orange Street
Wauchula, Florida 33873

Commissioners' Office (813) 773-6952
Bookkeeping & Payroll (813) 773-6932

County Attorney, Joel Evers
Enviromental Attorney, Judith S. Kavanaugh

COMMISSIONERS

Samuel L. Rawls District I
Ralph Smith District II
John Roy Gough District III
Luke Waldron District IV
Maurice Henderson District V

County Administrator, Harry E. Lampe
Clerk, Coleman W. Best

May 17, 1982

Early results of a hurricane shelter study conducted by the Central Florida Regional Planning Council show a deficit of shelter spaces in this County to house evacuees in a major hurricane. The County's primary shelters, mostly public schools, simply cannot accomodate all of our mobile home residents, as well as those who live in flood-prone areas, plus evacuees from coastal areas who will enter this County during a hurricane. Moreover, we cannot look to other Central Florida Counties for help, because the same situation exists elsewhere.

We are very concerned about this lack of shelter space because it means an increased risk to lives and property due to increased traffic on our roads and increased confusion as evacuees seek shelter.

With the help of the Regional Planning Council, Red Cross, Law Enforcement Officials and others, we are trying to identify additional shelter space to ease this burden. We are asking you and others in our business and religious communities if we can count on the availability of at least a protion of your building to be used as shelter during a hurricane. You may be interested in knowing that Chapter 252.51, Florida Statutes, states that private businesses serving as shelters cannot be held liable for accidents or injury.

Please contact Ron Luke of the Disaster Preparedness Office at 773-6373 if you can assist in this important project. In the meantime, thank you for your attention.

Sincerely,

Harry E. Lampe

Harry E. Lampe
County Administrator

George F. Heine, Jr.
Red Cross Representative

HEL/GFH/vb

"An Equal Opportunity Employer"

Appendix G

Central Florida Inland Shelter
Advisory Committee
Membership

October, 1982

Central Florida Inland Shelter Advisory Committee Members

Captain Eric Adams
Polk County Sheriffs Department

Carl Aleck
Polk County Civil Defense Director

Captain Larry Alexander
Lakeland Police Department

William Altman
Arcadia Fire Department

Reverend James Armstrong
Lakeland Ministry Association

Wynelle Arnold
Okeechobee Civil Defense Director

Thomas Barb, Administrator
H. H. Raulerson Hospital

Eugene Barry
WVFM Radio

Joe Baxter
Hardee County School Board

Jerry Bishop
DeSoto County School Board

Merle Bishop
Polk County Planning Director

Bryan Bogert, Administrator
Highlands General Hospital

Captain L. D. Brady
Florida Highway Patrol

Jim Brooks
Highlands County EMS

Major Harold Brower
Lakeland Police Department

Chief Charles Brown
Winter Haven Fire Department

Doyle Bryan
Sheriff Hardee County

Richard Smith, Coordinator
BPD, South Florida Area

Chairman Paul Buxton, Chairman
American Red Cross, Okeechobee

Harry Carger
Florida Highway Patrol

Kenneth Carlton
Arcadia Police Department

Superintendent R. Clem Churchwell
Polk County School Board

Ray Cochran
Lakeland Planning Department

Sheriff John Collier
Okeechobee County

Reverend Harrison Conley
First Baptist Church

Richard Cratsenberg
Lakeland Fire Department

Fred Crosby
National Weather Service

Greg Czerepak
Florida Department of Transportation

Dale Davis
Polk County EMS

Ralph Davis
Ridge Area Chapter American Red Cross

Chief Charles M. Deal
Lakeland Fire Department

Jim Degennaro
Polk County Community Development

Chief Richard Deloach
Sebring Fire Department

Delores G. Dry
HRS Deputy District Administrator

Central Florida Inland Shelter Advisory Committee Members (Cont'd)

Reverend Milton Dykes, President
Bartow Ministry Association

Richard Fellows
Administrative Assistant
City of Okeechobee

E. Gilbert Flatton, Administrator
Hardee Memorial Hospital

Chief Mack Flowers
Avon Park Fire Department

Kenneth Gammon
Florida Department of Transportation

Paul Gormley
Hardee Memorial Hospital

Chief Craig Graybill
Sebring Police Department

Chairman R. V. Griffin
DeSoto County Commission

Reverend James Guelzow
Peach Lutheran Church

G. Wes Gunn
Polk County Safety Director

Bob Hanks
Ridge Area Chapter American Red Cross

Cathy Hancock
DeSoto County Civil Defense

Frank Haraburda

Reverend Alex Harper, President
Ministerial Association

R. G. Harris
Glades County Civil Defense

Paul Hartley
DeSoto County Sheriffs Department

Captain Gary Helm
Lake Wales Police

Maurice Henderson
Hardee County Commissioner

Chairman Norman Heston
Board of County Commissioners

Ed Higby
Lakeland Chapter American Red Cross

Sergeant Roy Holland
Haines City Police Department

Richard Irwin, Administrator
DeSoto Memorial Hospital

Marvin Jackson
Polk County School Board

Betti Johnson
Tampa Bay Regional Planning Council

Bob Keating
East Central Fla. Reg. Planning Council

Jerry Keen
DeSoto County EMS

John Kinsaul, Superintendent
Okeechobee County School Board

Madge Lackey
Hardee Memorial Hospital

Harry Lampe
Hardee County Administrator

Chairman James D. Lashley
Okeechobee County Commission

Homer Latham
Florida Power and Light

Lisle T. Lenny, Administrator
Polk General Hospital

Chief Raliegh Lowe
Wauchula Police Department

Central Florida Inland Shelter Advisory Committee Members (Cont'd)

James Lofton, Coordinator
BDP, Central Florida Area

Ronald L. Luke
Hardee Disaster Preparedness

Harold Macon
Winter Haven Police

Tim Mack
Florida Highway Patrol

John C. Martin
Highlands County School Board

Gerald Martin
Polk County Planning Department

Chief Ronald Martin
Winter Haven Police

Reverend Richard McDermott, President
Winter Haven Ministerial Association

Major Dale McDonald
Winter Haven Police Department

Captain W. R. McIntyre
Florida Highway Patrol

Anthony Messina
Arcadia Fire Department

L. E. Mitchum
Lakeland Fire Department

Louie Mims
Sheriff of Polk County

Ray Nowack
Kissimmee River Volunteer Fire Department

Aubry O'Pry
DeSoto County Civil Defense Director

Executive Director Nola Osborn
Lakeland Chapter American Red Cross

Butch Parkinson
Okeechobee Sheriffs Department

Sergeant T. G. Parrish
Florida Highway Patrol

Joseph M. Pelissier
National Hurricane Center

Art Perry
Highlands General Hospital

Chief Ray Peters
Wauchula Fire Department

Chief Tim Pitts
Bartow Fire Department

Jim Platt
Wauchula Fire Department

Royce Ready
Polk County Commission

Eugene Ritch
Arcadia Police Department

Bill Sager, Administrator
Walker Memorial Hospital

Bruce W. Savage
Highlands Civil Defense

Allen Saxe
City of Winter Haven

Stephanie Schlesser
Southwest Florida Regional
Planning Council

Gabriele Seeling

Bill Segler
Winter Haven Fire Department

Sergeant Lamar Saufert
Florida Highway Patrol

Lieutenant Doug Sexton
Bartow Police Department

Danny Shea
National Guard Armory

Reverend Don Shearer
New Wine Fellowship

Joe Sheppard
Sheriff of Highlands County

Central Florida Inland Shelter Advisory Committee Members (Cont'd)

Chief Robert Singletary
Avon Park Police Department

Chairman Josephine Smail
American Red Cross

Kevin Smith
Withlacoochee Regional Council

James Sorenson
Arcadia Fire Department

Lieutenant Tony Sparks
Bartow Police Department

Reverend Richard Starr

William Stephenson
Planning Director

Grace Stiner, Manager
American Red Cross

Glen Sutphin
Planning Director

Armon Summerall
Director Public Safety, DeSoto County

Sheriff Robert Thomas
DeSoto County

Chief Louis K. Tomey, Jr.
Okeechobee Fire Department

Spencer Thompson
Bowling Green Police Department

Dan Trescott
Bureau Disaster Preparedness

Captain J. E. Vann
Florida Highway Patrol

Dr. & Mrs. J. W. Vaughn

Jim Verplanck
Director Planning & Zoning

Clayton White
Planning Director

Frank Williams
Florida Highway Patrol

Judd Wood
American Red Cross Florida

NOAA COASTAL SERVICES CTR LIBRARY
3 6668 14111093 4