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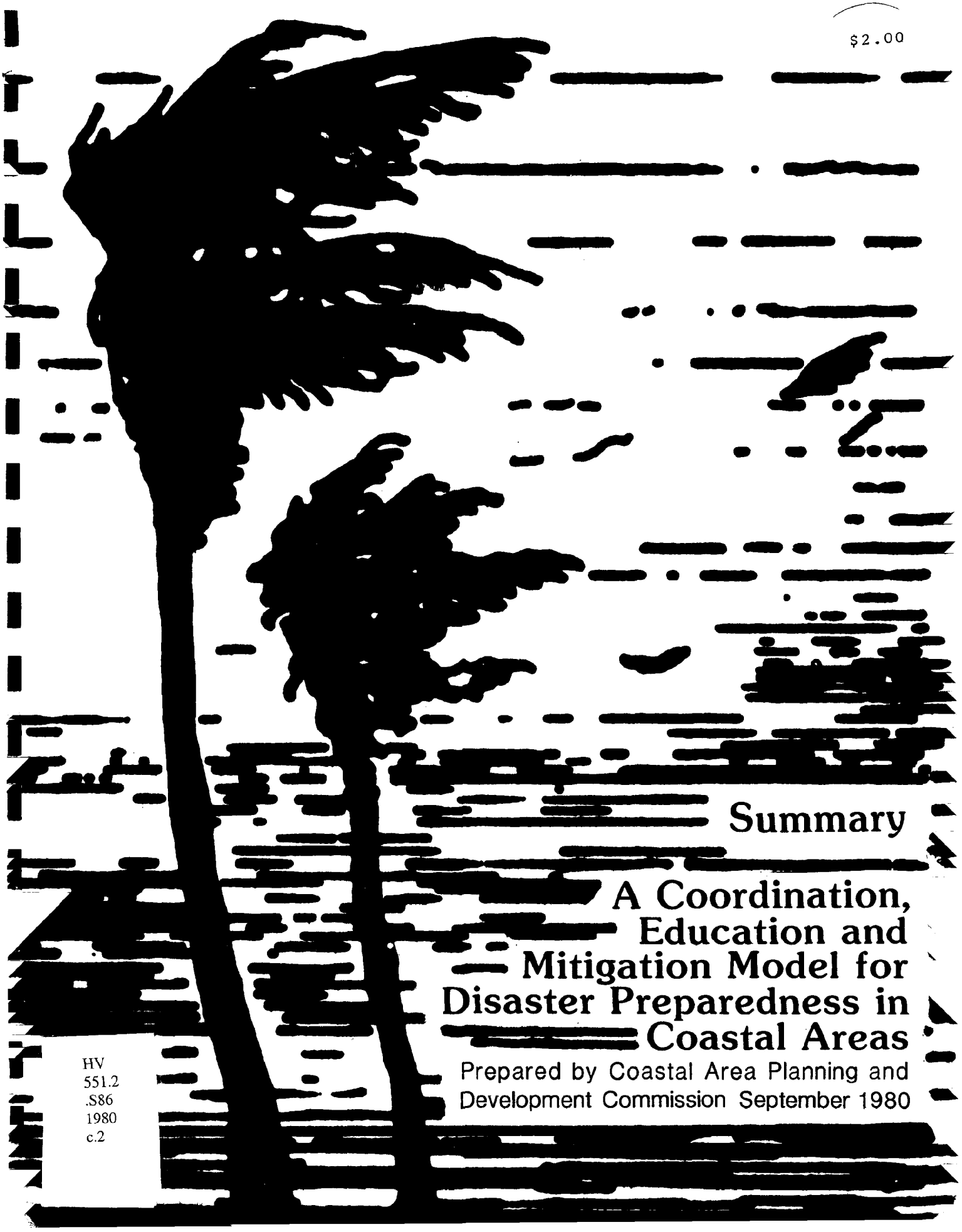

Summary

A Coordination, Education and Mitigation Model for Disaster Preparedness in Coastal Areas

Prepared by Coastal Area Planning and Development Commission September 1980

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SUMMARY OF

A COORDINATION, EDUCATION, AND MITIGATION MODEL

FOR

DISASTER PREPAREDNESS IN COASTAL AREAS

Prepared by
Coastal Area Planning and Development Commission
Brunswick, Georgia

September, 1980

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I. INTRODUCTION

OVERVIEW OF THE PROJECT

The local elected officials of coastal Georgia have recognized the need for a coordinated disaster preparedness program. As a result, a study was undertaken by the Coastal Area Planning and Development Commission (APDC) to determine the most effective manner of coordinating the array of storm related plans that currently exist in the area. Since most disasters, natural or man-made, are a regional problem, it was determined that preparedness measures should be a regional effort. The need for a coordinative mechanism at the regional level became apparent.

In December, 1979, the Coastal APDC met with Federal Emergency Management Agency (FEMA) officials in Washington to discuss the viability of implementing a regionwide disaster preparedness program along the coast of Georgia. The overall goal of the project was to strengthen local governments' capacity in civil preparedness matters. This was proposed to be accomplished through the direct provision of technical assistance to local governments by substate/regional planning agencies. The Coastal APDC's formal proposal called for a four element program -- planning, mapping, education, and mitigation and was entitled "Coordination, Education and Mitigation Model for Coastal Georgia Storm Preparedness." At the time the proposal was submitted to FEMA, it was stressed by the Coastal APDC that the project was unique in approach and possessed the potential for use by FEMA as a nationwide model for disaster preparedness, response, and recovery.

Recognizing that the Coastal APDC proposal could have merit as a prototype for disaster activities, FEMA contracted with the agency to conduct a study designed to:

1. Research existing storm preparedness efforts undertaken by state/substate regional agencies throughout the country and identify ways in which a comprehensive program could be most effectively implemented at the substate/regional level.

2. Outline the nature of an advisory council for a hazard mitigation program.

3. Expand the role for mitigation activities to include multi-hazards.

4. Research the means of securing maximum involvement of various state, federal, and local agencies in a demonstrative activity.

5. Identify the implications of such a project to other coastal areas and explore the role of national interest groups or other institutional entities in maximizing the utility of conclusions and processes developed in other geographic settings.

The primary issues to be addressed in the Coastal APDC study were whether, in fact, the original proposal was unique; whether regional agencies had participated in the past in such comprehensive programs and, if they had not, whether it was feasible for FEMA and state emergency service agencies to use these agencies in building the capacity for disaster preparedness, response, and recovery. The completion of the Coastal APDC study and subsequently published report entitled "A Coordination, Education and Mitigation Model for Disaster Preparedness in Coastal Areas" indicated that a comprehensive regional approach to disaster preparedness planning, through direct technical assistance provided by substate/regional planning agencies, was unique and viable. The document presented here is a summary of the report and study completed by the Coastal APDC.

THE STUDY AREA

The coastal area of Georgia, (see Figure 1) covering an eight-county area and served regionally by the Coastal APDC, was used as the primary study area for the research conducted. It is an area covering 3,785 square miles with a population of approximately 350,000 in 1980. The contrast between slow, rural and rapid, urban growth provides a representative area in which to conduct a study of disaster preparedness.

The Coastal APDC is one of eighteen substate/regional planning agencies in the state and one of approximately 671 in the nation. Through the implementation of its programs, the Coastal APDC is continually involved in planning activities such as land use, transportation, coastal resources management, military growth related impacts, economic development, and provisions for the elderly. Additionally, among its designations, the Coastal APDC is the Area Agency on Aging, A-95 Review Clearinghouse, Economic Development District, promotion center for the Coastal Georgia Tourism Program, and the agency responsible for the Department of Housing and Urban Development (HUD) 701 regional planning programs.

In addition to the use of the Coastal APDC region as the primary study area, research was conducted throughout the Atlantic, Pacific, Gulf, and Great Lakes states. Substate/regional planning agencies, state emergency service agencies, and local officials were surveyed regarding their roles in disaster preparedness programming.

ELEMENTS OF THE STUDY

Of primary importance to local officials is the development of effective disaster preparedness plans for their jurisdictions. However, in addition to disaster planning concerns, local elected and appointed officials have become more cognizant of the need to formulate prudent development guidelines which mitigate the effects of natural disasters, such as hurricanes, on property. Educational and public hazard awareness programs were also found to be an important mitigative measure in reducing the loss of lives due to a natural disaster. Finally, map resources for disaster response planning and public information were very limited in Georgia's coastal area.

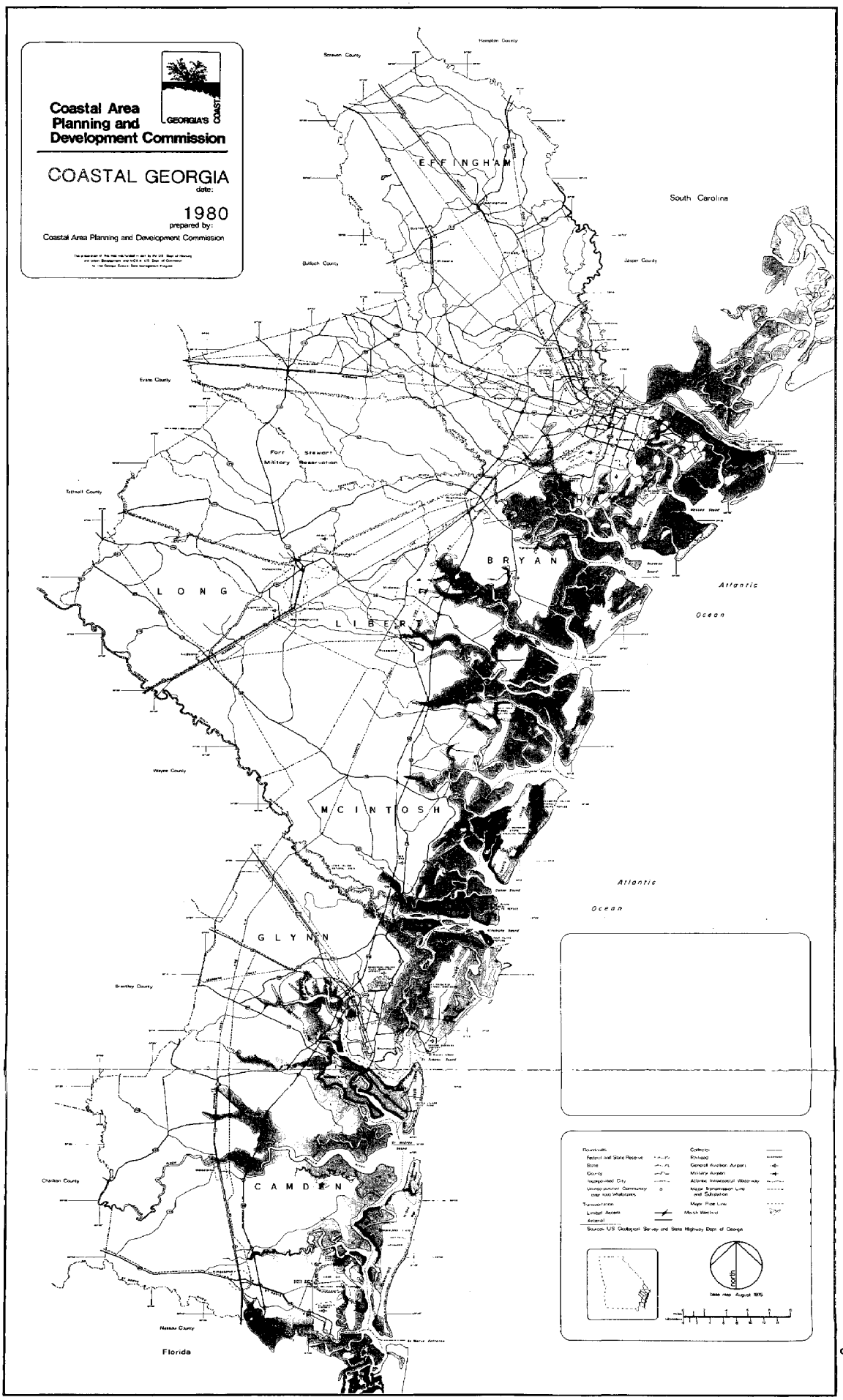
Coastal Area Planning and Development Commission
GEORGIA'S COAST
COASTAL GEORGIA
date:
1980
prepared by:
Coastal Area Planning and Development Commission
Screven County
Hampton County
EFFINGHAM
South Carolina
Bulloch County
Jasper County
Evans County
Fort Stewart Military Reservation
Tattnall County
BRYAN
LONG
LIBERTY
Atlantic Ocean
Wayne County
MCINTOSH
Atlantic Ocean
GLYNN
Brantley County
Charlton County
CAMDEN
Nassau County
Florida
Roadways
Federal and State Reserve
Zone
County
Incorporated City
Unincorporated Community over 100 Inhabitants
Transportation
Limited Access
Arterial
Collector
Railroad
General Aviation Airport
Military Airport
Atlantic Intracoastal Waterway
Major Transmission Line and Substation
Major Pipe Line
Marsh Wetland
Source: U.S. Geological Survey and State Highway Dept. of Georgia
north
base map August 1976

Figure 1

The need for coordinated disaster preparedness efforts is not confined to Georgia and, as a result, FEMA contracted with the Coastal APDC to develop a model program that could be used in any area of the United States. The "Coordination, Education and Mitigation Model for Disaster Preparedness in Coastal Areas" is applicable not only to coastal disasters but disasters that would occur any place in the country.

To achieve this end, research was undertaken to determine where the responsibility rested for disaster planning, response, and recovery. Research was also conducted to identify the needs of local and state government in disaster preparedness and the types of assistance that could be provided to build the capabilities of both. To guide the research project, a task force was formed consisting of federal, state, and local representation. This was done to insure that all data sources were utilized. The research document, "A Coordination, Education, and Mitigation Model for Disaster Preparedness in Coastal Areas" is intended to be a "cookbook" to guide the development of a comprehensive disaster preparedness program including planning, education and public awareness, mapping, and mitigation elements, in any area of the United States.

In summary, there is a need for some coordinative mechanism as well as a means of providing technical assistance to local governments in developing a comprehensive disaster preparedness program. Substate/regional planning agencies can be a technical arm, on the local level, for state emergency service agencies and provide the much needed disaster preparedness planning assistance.

II. RESPONSIBILITY FOR DISASTER PREPAREDNESS

OVERVIEW OF RESPONSIBILITY

The Federal Emergency Management Agency, as the primary national agency for disaster preparedness, response, and recovery, uses a regional approach in providing services. Its central office works through regional offices and they, in turn, work with states in implementing their myriad of programs. State agencies responsible for emergency services, such as civil defense agencies, typically divide their state into large substate areas. These areas, often covering 20 counties or more, are usually served by one area coordinator who, because of limited staff and time, is not able to provide "in-depth" comprehensive disaster preparedness planning assistance to all of the individual local governments in the area.

Research and Findings

Twenty-five coastal and Great Lakes states were surveyed to determine where the legal responsibility rests for disaster preparedness planning, response (evacuation order), and recovery. The primary state laws dealing with responsibility were also compiled as reference material.

Results are shown by the following percentages of the states surveyed:

Planning

1. The primary responsibility rests solely with the local chief elected official -- 60 percent.

2. The primary responsibility rests solely with the state emergency services agency -- 36 percent.

3. Total local responsibility -- sole or shared -- 64 percent.

Response (authority to order evacuation)

1. Governor ..... 16 percent
2. Local chief elected official ..... 20 percent
3. Shared local/Governor ..... 36 percent
4. Shared local chief elected official/other local officials ..... 20 percent
5. No authority or unclear ..... 8 percent
6. Total local responsibility -- sole or shared ..... 76 percent

Recovery

1. Primary state emergency management agency ..... 28 percent
2. Local chief elected official ..... 68 percent
3. Shared state/local ..... 4 percent
4. Total local responsibility -- sole or shared ..... 72 percent

Regardless of where primary responsibility lies for developing disaster preparedness, response, and recovery plans, actual implementation will take place at the local level. Therefore, the success of such planning efforts depends on the activities of local officials and their ability to perform effectively.

In all states surveyed, organization of local civil defense units within political subdivisions of states is either required by law or is strongly encouraged. Even in states where local civil defense organizations are required by law, it has proved to be virtually impossible to enforce a particular level of activity in each organization. Whether mandated or encouraged, the effectiveness of local civil defense organizations depends on personnel, local support from elected officials as well as the community, and financial support and assistance from the state emergency service agency.

Many urban areas may possess in-house planning capabilities (i.e. a professional staff for disaster planning) and, therefore, possess the greatest level of civil defense involvement and activity. In rural areas of the country, some civil defense officials are fulltime employees of local government, some are volunteers, while some serve in dual capacities. In rural areas, for example, a county clerk may serve as local civil defense director. In the cases of such part time directors, heavy reliance is placed on state civil defense area coordinators for providing technical assistance.

Some areas have improved preparedness measures through experience, such as the Gulf Coast area which has experienced a high frequency of coastal storms. Areas that have not experienced frequent damage from storms are not as well prepared. Again, the civil defense area coordinator is called upon to fill the gap created by the local governments' lack of experience in actual disaster situations.

To determine possible tools for expanding local and state government capability, seventeen coastal states were surveyed. Of the states surveyed, 40 percent currently use substate/regional agencies to enhance their capabilities in some way. The functions they serve have been in data collection, evacuation planning, local review of state assisted disaster response plans, provision of map resources, and assistance with the National Flood Insurance Program (NFIP). Sixty-eight percent of the state emergency service agencies indicated that additional involvement of regional agencies would be a valuable supplement to state disaster preparedness agency capabilities. Specific examples were in providing technical assistance in preparing plans and further developing educational and awareness programs.

Conclusion

The demand placed on civil defense area coordinators is great. In many cases, it is physically impossible for them to provide continuous "in-depth" technical assistance to all local governments who require it. Twenty counties or more may be included in such a civil defense substate area. If, in that area, all political subdivisions are required by law to develop and maintain disaster response plans and do not possess the in-house capabilities to do so, many local governments are left without the necessary guidance. States frequently provide local governments with a document after which to model their own plans. This may be the overall state disaster response plan or a model county plan and can provide a sound base for planning. However, because it does not reflect the specific needs of each locality, local governments must tailor the model to fit their needs. In order to be effective, such models must either be very basic in nature with the process for development clearly defined or be accompanied by staff to assist in adaptation to local needs. Many area coordinators simply do not have the staff to individually assist each and every local government in the initial development of a program and the necessary annual review and revision process. A mechanism for building the capability of state and local government is needed. Substate/regional planning agencies can provide such a mechanism. Typically they serve much smaller conglomerates of local governments than state civil defense substate area coordinators. They provide technical assistance in a variety of areas and could assist state emergency management agencies in providing technical assistance in disaster preparedness planning to local governments.

III. BACKGROUND -- REGIONAL AGENCIES

OVERVIEW OF SUBSTATE/REGIONAL PLANNING AGENCIES

The phrase "substate/regional planning agency" refers to a multi-county/multi-functional public organization involved in a variety of programs and services that assist local government. Regional agencies are, for the most part, voluntary associations of local governments created for the purpose of providing information, assistance in obtaining federal funds, and a forum for addressing common problems. Examples of areas of activity of such agencies include: comprehensive land use planning, housing, A-95 review, tourism promotion, transportation, environmental quality, human resources, grantsmanship, economic development, community development, public safety, mapping, and demographic data collection. In general, characteristics of such organizations are:

"- They are organized on a multi-jurisdictional basis (usually multi-county).

- They seek to achieve governmental coordination and cooperation across legal jurisdictional boundaries to handle mutual needs and problems.

- They are multi-functional in scope and work with a variety of programs and problems.

- They are advisory and lack operational authority. They do not have the governmental powers of taxation regulations (with few exceptions).

- They are legal entities which exist through the agreement of their member governments."[1]

---

[1] Robert J. Marshak, "Areawide Disaster Response: Civil Preparedness and Regional Councils," Defense Civil Preparedness Agency, Human Sciences Research, contract DAHC 20-73-C-1025, Work Unit 4412E, February, 1974.

HISTORY OF REGIONAL PLANNING AGENCIES

Regional agencies exist as creations of the particular state(s) in which they are located and provide a means of dealing with multi-jurisdictional problems. Records indicate that in 1929 the first regional effort in the nation was undertaken in the state of New York, where a regional land use plan was developed. Today, as in the 1920's, areas of activity cross jurisdictional boundaries in ever increasing fields.

Many counties and communities, especially in rural areas, do not have the technical or financial resources to comprehensively deal with the many problems and issues they face. In such cases, regional planning agencies serve as "tools" of those local governments. A total of 671 substate/regional planning agencies exist in the United States, as of 1980, and reach 99 percent of all counties in the nation. Partially as a result of expansion of federal programs and increases in requirements of these programs, substate/regional agencies are becoming even more effective and multi-functional in their service to local governments. A recent survey of the National Association of Regional Councils (NARC) indicated that regional agencies are involved in at least ten federal programs:

1. The HUD Comprehensive Planning Assistance Program (701).
2. Areawide Water Quality Management (208).
3. Air Quality Management (Section 175).
4. Solid Waste Management (Environmental Protection Agency).
5. Areawide Agencies on Aging (AAA).
6. Health Systems Agencies (HSA).
7. Criminal Justice Planning (Law Enforcement Assistance Administration).
8. Economic Development (Economic Development Administration).
9. Metropolitan and Rural Transportation (Department of Transportation).
10. Title V Federal Regional Agencies (i.e. Coastal Plains Regional Commission).

As the above list indicates, the gamut of activities and programs which regional agencies participate in is broad. An expansion to include disaster preparedness, response, and recovery planning would seem a natural progression.

ADVANTAGES OF INVOLVEMENT OF REGIONAL AGENCIES

Regional agencies possess many advantages which make them a useful tool for implementation of local, state, and federal programs such as disaster preparedness, response, and recovery. On a broad national scale, among these advantages are:

1. Substate/regional agencies are not a threat to "home rule" as their boards of directors are local elected and appointed officials.

2. Substate/regional agencies are not an extension of any state or federal agency.

3. Substate/regional agencies exist purely as an advisory body and technical assistant to local governments.

4. Substate/regional agencies serve as a liaison between federal/state and local governments.

Creative use of substate regional planning agencies by federal, state and local governments can provide significant assistance to local governments in meeting their own responsibilities.

IV. SUBSTATE/REGIONAL PLANNING AGENCIES AND DISASTER PREPAREDNESS

A comprehensive regional approach to disaster preparedness, response, and recovery programming has never been undertaken in the United States. Such a regional approach, including the elements of planning, mapping, education and public awareness, and mitigation, has been determined to have validity and potential for effectiveness in delivering technical assistance to local units of government.

Research and Findings

The results of a telephone survey conducted in the Atlantic, Pacific, and Gulf states indicated that 27 percent of the coastal substate/regional planning agencies in those states were found to have done some type of work in disaster preparedness (see Table 1). Inquiries concerned the provision of direct technical assistance to local governments in the areas of planning, education/public awareness, mapping and mitigation. Included in the 27 percent are active and inactive programs. Many of the respondents indicated that in the past they had produced documents that were never implemented or had undertaken activities that were discontinued for lack of financial or staff support to make them useful. Many were not comprehensive efforts and included only a few of the necessary elements vital to a workable disaster response plan.

In terms of educational efforts, results of the regional agency survey indicated that such efforts were not comprehensive and often utilized no physical tools. Mapping activity appeared in only three regions and was not geared to providing technical assistance in filling specific needs of local governments.

Mitigation activities undertaken by regional agencies basically included assistance, upon request, to local governments in administering the NFIP, writing land use ordinances and subdivision regulations, participating in land use planning, participating in the A-95 review process, and in two states, Florida and Virginia, participating in a state mandated review of development affecting more than one local government. The more active mitigation efforts involved specific hazard mitigation planning in only eleven regions.

In an effort to insure that a complete analysis of regional agency involvement in disaster preparedness efforts was undertaken, a survey was conducted via national interest groups. Regional agencies involved in such efforts in landlocked regions responded, with results indicating minimal, isolated efforts and, certainly, no comprehensive approach.

TABLE 1

Coastal Regional Agencies (by State) Providing Direct Technical Assistance to Local Governments*

STATE	PLANNING	EDUCATION	MAPPING	MITIGATION
Alabama				
California	X			X
Delaware				
Florida	X			X
Georgia				X
Louisiana				
Maine	X			X
Massachusetts	X			X
Mississippi				
New Jersey				
New York				
North Carolina				
Oregon				X
South Carolina				
Texas	X	X		
Virginia				X
Washington				

* "X" indicates one or more coastal regional agencies in the state involved in providing technical assistance in the particular element of the program.

Finally, state emergency service agencies were contact by telephone to determine their involvement in providing assistance to local government as well as their knowledge of other groups/agencies who were involved in disaster preparedness programs. From the completed research, only six groups/agencies were identified as having programs of special significance. None were comprehensive efforts in providing technical assistance in all basic areas of planning, education/public awareness, mapping, and mitigation.

Conclusion

It is clearly evident from a review of the results obtained that in no coastal state has a comprehensive approach to disaster planning been undertaken on a regional basis. From a review of all the data gathered, it was learned that in only two of the agencies surveyed were any activities approaching a comprehensive nature being undertaken. However, the work by these agencies, the Tampa Bay Regional Planning Council (Florida) and the Southwest Florida Regional Planning Council, does not focus on providing direct technical assistance to local units of government in the region. Local governmental entities must be provided more comprehensive and intensive technical assistance in all elements of a preparedness program if they are, indeed, to be prepared.

Since the nature of substate/regional planning agencies is advisory, such agencies act at the request of member local governments in providing assistance. Many of those requests are motivated by a requirement made of local governments to perform a certain task in order to comply with federal, state, or local needs.

In general, these agencies are well equipped to maintain close contact in the geographical area and to assist the civil defense area coordinator in providing technical assistance to local governments in disaster preparedness, response, and recovery. Working with state emergency service agencies, they can provide the direct assistance necessary to insure consistency with state plans, coordination with supporting groups and agencies, and a system for regular review and revision of all phases of the disaster planning program.

Recommendation:

- Substate/regional planning agencies should be utilized by federal and state emergency preparedness agencies to build the capabilities of federal, state, and local government in developing regional disaster preparedness programs. Local technical assistance should include development and maintenance of disaster response plans, hazard awareness programs, map resources, and hazard mitigation activities.

V. ADVISORY COUNCIL AND SUBCOMMITTEES

Direction and control of a disaster preparedness and response program is the guidance necessary to develop the program in a coordinated and organized fashion. To be effective in the implementation stage, the responsibility for direction and control during the planning process must be placed with those who will be charged with carrying out the plan.

To insure coordination in the development of the program, as well as implementation of each function, it has been found that advisory groups representing all involved agencies and groups have served in a valuable capacity. Such groups are found at the federal, state, and local levels. Most substate/regional planning agencies use advisory councils to guide the development of their various programs. These groups, made up of local officials, business and industry, institutions, special interest groups, and the citizenry, effectively represent the views of the region. If a comprehensive disaster preparedness program is to be undertaken at the regional level, it follows that a regional advisory council and subcommittees should be appointed to direct the program.

Research and Findings

Advisory groups transcend levels and departments of government to coordinate activity and to serve the citizens in the most effective manner possible. A study completed in 1979 by the Advisory Committee on Intergovernmental Relations in Washington, D. C. indicated that, of the 50 states surveyed, in 23, or 46 percent, an Intergovernmental Advisory Committee assisted the governor in guiding the development of state programs. From the 25 coastal and Great Lakes states surveyed by the Coastal APDC, 14 or 56 percent, utilized such advisory committees. The advisory groups represent state agencies involved in disaster preparedness planning at the state level. Examples are also found at the local level. In Mobile County, Alabama, a civil defense authority was created as the governing board of the Mobile County Civil Defense Organization. It represents membership from political entities in the county as well as the county itself. In Chatham County, Georgia, a Civil Defense Council serves in an advisory capacity to the Chatham County - City of Savannah Civil Defense Department.

In order to provide a concrete example of how the regional advisory council and subcommittees should be organized, a careful analysis was made of the state of Georgia's disaster response plan and which agencies/groups had primary or secondary responsibility in functional areas of disaster response. These roles are summarized in Table 2 (P denotes primary function and S denotes a support function.)

Since Georgia's plan is similar to that of other states, it should be possible for the results and methods presented here to be transferred for use by others. To define functional areas of response at the local level, the more specific response activities identified from the Georgia state plan were consolidated under general headings as follows:

1. Training and Education.
2. Communication/Warning.
3. Resources and Coordination.
4. Evacuation and Transportation.
5. Shelters.
6. Clean-up and Recovery.

Additional means of determining these functional areas is described in Section VI, "Elements of the Program" under Planning.

In terms of response roles at the regional and local levels, primary and secondary response agencies/groups and service providers should be identified by interviews with those chief elected officials and others with authority for preparedness, response, and recovery.

Conclusion

The advisory council and subcommittees should represent interests throughout the region. It is important that their members be persons who are committed to the program and would attend regular meetings to help formulate programs and maintain them. A letter of committment from each agency or group represented can solidify the relationship with the advisory council. Regular meetings of these groups should be used initially to build a framework for disaster preparedness planning. That framework can be utilized in the development of individual county (or municipal) response plans so that all local plans in the region are coordinated and address needs common to each county or community.

Substate/regional planning agencies can serve as a facilitator to bring together those groups involved in disaster preparedness. The primary responsibility of such an agency would be to serve as a coordinative and technical assistance mechanism.

Recommendation:

- An advisory council should be formed representing the region served by the disaster preparedness, response, and recovery program. Membership should include groups/agencies expected to play primary roles in implementation. Advisory council subcommittees should be formed representing the region served by the disaster preparedness, response, and recovery program. Membership should include groups/agencies expected to play secondary roles in specific functional areas of implementation. Subcommittees should include, but not be limited to the following:

    1. Training and Education.
    2. Communication/Warning.
    3. Resources and Coordination.
    4. Evacuation and Transportation.
    5. Shelters.
    6. Clean-up and Recovery.

VI. ELEMENTS OF THE PROGRAM

A disaster preparedness program is more than a document containing response procedures. It is a continuous, coordinated effort to prepare the general public for emergency situations. It is also an effort to prepare responsible agencies and groups who direct, control, and support operations in emergency situations. It is the difference between having a written plan and active planning.

Elements of a comprehensive disaster preparedness program can be summarized in four basic areas: planning, mapping, education and public awareness, and mitigation.

Research and Findings

Specific elements of a comprehensive preparedness program were determined through the analysis of plans and programs in other areas of the country as well as in Georgia's coastal area. Personal interviews were conducted with local agency heads and officials and the Georgia Civil Defense. From this information, functional areas of disaster preparedness, response, and recovery responsibility were identified.

In determining the tools most effective for an education/public awareness program, media uses were identified through a survey of the media itself.

Mapped information needs were determined through telephone interviews with state emergency service agencies, local civil defense directors, and other users. The National Oceanic and Atmospheric Administration (NOAA), producers of the Storm Evacuation Map (STEM) series were also contacted.

Mitigation alternatives were identified from data collected through telephone surveys of state emergency preparedness agencies, regional planning agencies, local building inspectors, and from FEMA, Region IV, Insurance and Mitigation Division. Federal and state programs offering local incentives for mitigation activities were also researched and analyzed. The needs of local government were assessed in terms of the responsibility placed on local government and the tools they have for implementation.

Planning

The following parts, or functional areas of a disaster response plan, were identified by reviewing printed documents from various coastal areas, examining the results of the survey of other geographic areas, and contacting program users in the state of Georgia:

1. Training and Education.
2. Communication/warning.
3. Inventory of resources/coordination/emergency services.

4. Evacuation/transportation/re-entry.
5. Shelters.
6. Clean-up and recovery.

It is imperative that planning activities not be undertaken in an isolated manner. As every component of the plan relates to the others, each city or county relates to those surrounding it. Plans must include concrete provisions, for example, for dealing with traffic related problems in host counties during evacuation periods, opening and operating shelters and reception centers and establishing communication networks during power outages.

The subsequent narrative summarizes each of the functional areas.

Training and Education

The following is a list of components that should be included in a training program for local officials:

1. Identification of primary activity for each group.
2. "Classroom" instruction on how to carry out responsibility.
3. Simulation exercises to test responses and adequacy of the local plan.
4. Identification of resource equipment.
5. Identification of resource personnel and their duties.
6. Regular review of the written plan.

Communication and Warning

The basic components for a disaster warning system are published by the Defense Civil Preparedness Agency (DCPA), now part of FEMA. Local disaster warning plans should be prepared to:

1. Identify the agency/individual responsible for warning.
2. Describe types of warnings that may be received and require dissemination.
3. Explain method of dissemination.
4. Provide for activation of the warning system.
5. List actions to be taken.
6. Include key agencies and personnel.
7. Allow warning point authority to terminate warning.
8. Provide for periodic testing of the system.
9. Review/revise at least every two years.

Inventory of Resources/Coordination/Emergency Services

Hardware and software resources are the tools of disaster response efforts. A "parts" inventory should represent each community's resources and the region as a whole. Many local governments have such listings in various forms. Some are written and some are not. In many cases, written listings are not detailed or maintained. As an annex to local plans, such listings are generally not distributed to all departments of local government where an effective review process could occur. Services as well as equipment must be identified, such as:

Service	Equipment and Supplies
1. Medical services	1. Food
2. Engineering services	2. Clothing
3. Search and rescue	3. Medical supplies
4. Transportation	4. Vehicles
5. Debris removal	5. Heavy equipment
6. Water testing	6. Power generators
7. Fire protection	7. Ice
8. Temporary shelter	8. Household utensils
9. Temporary housing	9. Furniture for temporary housing
10. Unemployment counseling	10. Debris dumping sites
11. Financial assistance counseling	11. Chain saws
12. Veterinary services	12. Water pumps or storage equipment
13. Police protection	13. Water

These listings should be delineated by county and municipality. They should be specific and cross referenced in an index as to their location and type of function. Whenever possible, a simple map should show location of service. The listing should also include contact people and emergency telephone numbers or a means of contact.

Evacuation/Transportation/Re-entry

It has been shown that sole or shared legal responsibility for evacuating an endangered area rests with local chief elected officials in 76 percent of the states surveyed. That figure, in itself, illustrates the need for well organized evacuation plans and sound methods for determining required evacuation time.

Basic requirements of an evacuation plan should include:

1. Number of people to be evacuated.
2. Number of vehicles to be used.
3. Identification of evacuation routes.
4. Identification of evacuation zones for storm related and other disasters, where a segment of a population is in immediate danger and others are not.
5. Identification of special population requiring assistance.
6. Pre-determination of time required for evacuation with regard to type, severity of disaster, and expected impact.
7. Procedure for affecting re-entry in the post-disaster state.

Shelters

The identification and operation of shelters is a regional effort. In the event of a disaster, neighboring communities must be prepared to receive the endangered population. Specific requirements should serve as the groundwork for a coordinated shelter plan:

1. Identification of facilities.
2. Maximum capacity.

3. Number of evacuees to be accommodated.
4. Authority to open shelters.
5. Operations responsibility -- equipment, supplies, minimum personnel, registration.
6. Communication link with the Emergency Operations Center (EOC).

Clean-up and Recovery

Restoring a community to original or improved condition after a major disaster can require virtually every piece of equipment and all available manpower not only in the immediate area but from miles around. Such a situation implies regionalism more strongly than ever.

Basic components in a clean-up and recovery program include:

1. Damage assessment.
2. Debris removal.
3. Road repair.
4. Utilities restoration.
5. Structural rebuilding.
6. Public property assistance.
7. Health and social services.
8. Temporary housing.
9. Mortuary and identification services.
10. Police protection.
11. Coordination of private organizations and volunteers.
12. Other state/federal assistance.

Each of the components listed above will be the subject of an annex to the clean-up and recovery plan. Components 1-5 are aimed at the physical activities in repairing a damaged community. Since local resources must be the first line of defense, they must be coordinated in advance of the disaster occurance. Public property assistance refers to the process of obtaining assistance for rebuilding activities beyond the capability of local efforts. Components 7-11 include local activity as well as state and federal assistance. Other state/federal assistance could include such things as unemployment or reemployment counseling and insurance administration. With the multitude of assistance programs available, local officials must be cognizant of their own roles and how to obtain additional assistance. Each annex will spell out personnel identification, equipment identification, cooperative agencies and what they can provide, the mission to be completed, who is in direction and control, a concept of operations, and administrative procedures.

Education and Public Awareness

The basic tools for an educational/public awareness program are:

1. Printed material.
2. Public meetings.
3. Special activities.
4. Audio visual aides.
5. News media.
6. Private organizations and volunteers.
7. Church/civic groups and volunteers.

Printed Material should be brief, easy to understand, and in general, should contain basic information about the type of disaster addressed. For example, a hurricane awareness brochure should include:

1. Definition of "hurricane watch" and "hurricane warning" and other National Weather Service (NWS) terms.

2. Response activities to take place when a hurricane watch and/or warning is issued (i.e. means of securing the home, supplies to take to a shelter).
3. Evacuation map showing, as a minimum, low lying areas expected to experience flooding, evacuation routes, and shelter locations and descriptions.
4. Information about flood insurance protection.
5. Where to get information about an approaching storm and necessary response activities (i.e. radio and television stations).

Material should be geared to special groups such as boat owners, hotel/motel owners, children, the elderly, and others.

Public Meetings, whether for the general population or special segments of it, should be entertaining as well as informative. Basic information presented at hurricane awareness meetings should include:

1. Science of hurricane development and hurricane history of the area.
2. Pre-season preparedness (encourage "family disaster plans").
3. NWS hurricane warning system and/or other disaster warning systems.
4. Pre-disaster preparedness (i.e. in a hurricane awareness program this should include, but not be limited to, how to secure your home and/or business and property, what provisions to make, and what to do if evacuation is necessary).

Special Activities to supplement general meetings and presentations can include:

1. Classroom presentations, displays, and projects in schools.
2. Presentations and displays for major employers.
3. Presentations and displays for the elderly, Girl and Boy Scouts, and at boat marinas.

Audio-Visual Aides can include:

1. Films.
2. Tapes.
3. Slides.
4. Posters.

Production and distribution centers can include:

1. Substate/regional planning agencies.
2. Schools and universities.
3. Libraries.
4. Civic clubs.
5. Private organizations (i.e. banks, utility companies).
6. State and local civil defense.

The News Media, in addition to regular news coverage promoting public meetings, can undertake a series of special efforts. Special efforts could include:

1. Feature stories and articles.
2. Interviews with noteworthy individuals (i.e. NWS forecaster, survivor of a disaster, safety engineer of a nuclear plant).
3. Public service announcements.
4. Promotional activities.

Private Organizations and Volunteers are resources that should be tapped in order to saturate the community with public information about disaster preparedness. Among these resources are:

1. Churches.
2. Civic groups.
3. Professional organizations.
4. Volunteers.
5. Business and industry (to include developers, construction contractors).

Mapping

Three basic map needs for disaster preparedness programs were identified in the survey of coastal region planning agencies, civil defense officials, and local governmental officials:

1. Planning.
2. Emergency Operations Center (EOC) use.
3. Public information.

Existing basic map resources are:

1. U. S. Geological Survey (U.S.G.S.) topographic maps.
2. DOT county highway maps.
3. NOAA/National Ocean Survey (NOS) STEM Series.
4. FEMA Flood Insurance Administration (FIA), Flood Hazard Boundary Maps (FHBM), and Flood Insurance Rate Maps (FIRM).

Maps for Planning must show detail in natural and man-made features, particularly when used as a base for computer generated storm surge data in hurricane evacuation planning. In order to be used for planning purposes, the following information should appear on any of the above listed base maps:

1. Identification of additional elevations (both maximum and minimum).
2. Updates of population figures.
3. Major development areas.
4. Storm shelters, showing primary, secondary, and refuge sites with associated elevations.
5. Major hospitals.
6. Additional "area" names.
7. Number of lanes in evacuation routes.
8. Major bridges (identify type of structure, i.e., draw bridge).
9. Addition of new road construction or other important roads.

Maps for the EOC should involve maps showing the entire region and its relationship to adjacent counties outside of the immediate area.

Of the four map sources noted, U.S.G.S., DOT, and planning agency maps show counties as a whole. Only planning agency maps are likely to show the entire region. Use of these maps would require addition of the following:

1. Evacuation zones for counties, cities, and major development areas.
2. Schools.
3. Hospitals, medical clinics, and other care facilities where a dependent population would be located (i.e. nursing homes).
4. Major employers.
5. Area command posts (i.e., communication, transportation).
6. Major potential traffic congestion areas.
7. Road blocks.

Maps for the Public should be clear, concise, and easy to read. Basic information should include:

1. Evacuation zones.
2. Evacuation routes.
3. Location of primary, secondary, and refuge shelters.
4. Flood stage areas and minimum and maximum elevations.
5. Hospitals.

The purpose of such maps is to inform the public, as simply as possible, whether they are in a danger area, where they should go, and how to get there.

A Uniform Mapping System can alleviate confusion. Through the survey of state emergency services agencies, it was found that at local levels a variety of mapping techniques and tools are employed. In 56 percent, DOT county road maps were used as a base. Forty percent used some other form. STEM maps were used in only four states, or 16 percent. In many of these areas, STEM maps were not yet available. Only 40 percent produced maps for public information.

Hazard awareness maps currently do not reach a large number of people. As interest increases and methods for publication and dissemination are widely employed, a uniform system of symbols will provide a national standard for hazard awareness symbols. Map symbols found to be used by major map producers, as well as map users, resulted in the suggested uniform symbols shown in Figure 2.

Alternatives for Production include graphic assistance and printing. Actual technical assistance in drawing maps can be provided by a number of possible sources:

1. City or county engineers or planners.
2. DOT mapping division.
3. State Civil Defense.
4. Private contractor.
5. College students/interns.
6. Substate/regional planning agency.

FIGURE 2

SUGGESTED UNIFORM MAP SYMBOLS

Buildings

Shelter (1-Primary, 2-Secondary, 3-Refuge. Primary shelters indicate the preferred or first shelters to become operational; Secondary shelters indicate those to be opened when primary shelters are occupied. Refuge sites indicate places where residents can take refuge only if they have no other alternative).

Hospital*

School or Institution*

Major Employer*

*These installations are not necessarily shelters. They locate substantial numbers of people or dependent groups who may require special attention or assistance.

Transportation

Primary highway, hard surface

Secondary highway, hard surface

Light-duty road, hard or improved surface

Unimproved road

Dual highway

4 Evacuation route (number denotes # of lanes if more than 2, arrow denotes direction of travel)

Railroad

Bridge

Airport

Topography

x7369 Spot elevation

40 Index contour

Low lying area (flood stage denoted by shading or color)

Printing capabilities may be found at the following:

1. DOT or other state agencies.
2. Corps of Engineers.
3. State Civil Defense.
4. College or university.
5. Private printer.
6. Newspaper.
7. Substate/regional planning agency.

The actual process for obtaining planning maps will be through distributing agencies such as NOAA, U.S.G.S., DOT or the regional agency. EOC maps will not be reproducible while maps for the public will involve the most extensive reproduction process. The most cost-effective method of reproduction is through use of black and white prints.

Mitigation

Mitigation is a term used to mean activity which will reduce or lessen the effect of an event. In terms of flooding, the interest is to protect existing development. A comprehensive regional plan should be the basis for flood mitigation efforts.

Congress created the NFIP in 1968 in the face of yearly increasing property losses in the nation's flood plains. The purpose of the program was to make flood insurance available at an affordable premium and to encourage more careful planning in use of the flood plain.

The burden of adopting and enforcing flood plain regulatory measures is on local government. The assistance provided to local government by FEMA is primarily through a liaison and through the state flood plain management office. Model ordinances are provided and a loosely structured monitoring program. Staff is simply not available to assist each and every community in building and implementing a sound flood plain management program. The burden realistically rests at the local level. Beyond the requirements of the NFIP, local governments can employ the tools discussed here.

Zoning and Local Ordinances are preceded by land use planning. With the adoption of zoning ordinances the community has, in essence, developed policies about the growth of the area.

Such regulations can:

1. Identify ecologically fragile or high hazard areas.
2. Control density, type and presence of development.

Subdivision Regulations can also regulate development of the flood plain. Under such regulations, the developer must meet certain requirements in order to build.

Such regulations can:

1. Disallow development in high hazard areas.
2. Require flood protection to property and structures prior to dedication and sale.
3. Regulate the design or access of public utilities.

Building Codes and Techniques can require compliance with a minimum of building standards. Codes can include requirements for:

1. Elevation.
2. Building practices.
3. Building materials.

A Building Permit System is required through the NFIP. The local building inspector plays a vital role in the enforcement of such a system. The requirement of a registered land surveyor's certificate of approval is the building inspectors support in ensuring that requirements have been met.

Open Space and Land Acquisition programs can retain the flood plain and maintain it in its natural state. No man-made obstructions are created, therefore, flood damage is minimal or non-existent in that open space area.

Open space can be:

1. Acquired by the community.
2. Required of developers in new subdivisions.

Relocation of Existing Structures

Repeated loss in the flood plain area causes a financial burden for federal, state, and local governments as well as private property owners. It is clear that mitigation alternatives should be explored. It has been found in several areas that relocation of structures in the flood plain is a cost-effective alternative.

Relocation alternatives include:

1. Relocation of existing dwellings.
2. Relocation of restrictive bridge structures.
3. Community redevelopment plans which include provision for acquisition, clearance, disposal, reconstruction, rehabilitation, and relocation of displaced persons.

Erosion and Sediment Control ordinances are generally intended to mitigate sedimentation and erosion effects but can result in the following practices regarding flood plain management:

1. Bank stabilization accomplished through vegetative covering.
2. Channel improvements accomplished through removal of sediment and debris to improve carrying capacity of a stream.

Structural Measures such as construction of reservoirs for flood control can reduce the magnitude of floodwater levels. Development of watershed management programs and construction of channel improvements generally have a positive impact on flood flows. There are times when structural measures are the most logical, cost-effective and, possibly, the only means of protecting what exists in the flood area.

Structural measures include:

1. Storage reservoirs with gates to control the release of water. Ungated reservoirs will produce a similar effect, although discharge openings in detention reservoirs should be designed to ensure that a greater than normal discharge does not occur.

2. Channel improvements to increase capacity including straightening, realigning, installing stabilizing structures, changing floodway and bank vegetation, and paving.

3. Levees to confine river and overbank flows and protect the landward area.

Discouragement of Development can be argued as a prudent flood plain management technique. This may not always be feasible. However, deterrants can be employed to discourage development of the flood plain. They include:

1. Public information.
2. Warning signs.
3. Historic hazards data.
4. Tax assessment practices.
5. Public facility extension.

Flood Warning and Evacuation Plans are vital in saving lives in time of flood occurance. Review of emergency plans for evacuation is also a form of mitigation. Generally speaking, there is probably no greater tool to reduce the effects of a potential hazard than to be prepared for its occurence.

Long Range Planning is a concept that considers the economic, social, political, and physical issues of an area. When formulated with public participation and adopted by the local governing body, a comprehensive plan reflects the goals, policies, and objectives of the body and the community.

The planning process is defined in six steps:

1. Identify the problems and define goals, policies, and objectives.
2. Collect and interpret relevant data.
3. Formulate a plan of action.
4. Evaluate the impacts resulting from that action.
5. Review and adopt the plan.
6. Implement.

Other Mitigative Measures. Mitigation is a general term and applies not only to flood related disasters. Other emergencies such as tornadoes, earthquakes, hazardous material incidents, and nuclear events all require protective measures.

The following examples illustrate other mitigative alternatives:

1. Disaster preparedness planning — plan for response to a disaster (i.e. evacuation due to a hurricane, toxic chemical spill, or nuclear disaster).

2. Risk planning -- determine where the greatest risk areas are and develop land use standards so that subsequent development will sustain the potential effects of disaster (i.e. geologic fault areas with respect to earthquake occurance).

3. Transferrable development rights — transfer land development rights from risk area to a less dangerous area (i.e. away from geologic fault area or flood plain).

4. Hazard assessment -- take an inventory of hazardous sites or possible occurrences (i.e. producers or handlers of hazardous materials).

Assistance or Training Needs and Providers. The planning and assistance needs of local government personnel charged with the responsibility and enforcement of disaster mitigation activities varies greatly. Urban local governments generally possess greater capabilities than rural areas in adequately enforcing hazard mitigation ordinances. Rural local governments tend to possess the lowest level capabilities in adequately enforcing hazard mitigation requirements. In order to provide a consistent level of enforcement of local hazard mitigation requirements among all local governments, it is necessary to implement training and assistance programs. This can be accomplished through substate/regional planning agencies who work directly with local governments toward the implementation of various community development projects and programs.

Specific activities can include:

1. Assistance to state flood plain management offices in organizing and hosting training workshops for local flood plain managers and the general public to include lending institutions, land developers, industries, and other private and public groups concerned with physical development.

2. Assistance to local flood plain managers in working toward correcting existing deficiencies in local ordinances and assisting local officials in properly administering these ordinances.

Federal, State and Local Involvement

FEMA is the primary agency providing hazard mitigation programs. In addition, other federal programs, though not intended for hazard mitigation specifically, have provided a community betterment spirit. They include:

1. The Housing Act of 1964, which provides Comprehensive Planning Assistance Program funds ("701") through HUD to states and local governments for physical planning.

2. The Clean Water Act which provides funding to state and local governments for managing both surface and subsurface water quality.

3. The Coastal Zone Management (CZM) Act of 1972, which allows states and local governments to plan for the conservation of appropriate coastal resources.

Primary legal responsibility rests with local government to employ these programs in the best manner to mitigate hazardous events in the community.

Mitigation and Substate/Regional Agencies

Local governments, for the most part, do not possess the financial resources to undertake extensive programs to find cost-effective tools and techniques for disaster mitigation. They are forced to deal with pieces of the puzzle in the best ways they can.

Since mitigation is "planning to reduce loss," the nature of mitigation activity is innate in substate planning agencies. From their inception, substate/regional agencies have been involved in regional planning. It is a natural progression to expand the area of technical assistance now provided through existing reosurces to include hazard mitigation assistance. Previously stated resources such as demographic and map data, technical expertise in administration, soils capabilities, hydrology, law enforcement, and planning are there to be applied to any new field of work.

Conclusions of the "Elements of the Program" Section

Four basic components are needed to formulate a regional comprehensive disaster preparedness program: planning, education and public awareness, mapping, and mitigation. A framework or outline is also necessary upon which to build such a program. Finally, direct technical assistance is necessary for each unit of local government to implement the program locally as well as regionally.

Recommendations:

- A formal training and education program should be developed in each state for all local officials. It should include workshops, simulated response exercises, and printed guidebooks. Substate/regional planning agencies should be utilized to provide staff in aiding the development, distribution, and implementation of training and education programs.

- A regional network for communication should be established, including all possible resources.

- Local civil defense departments should designate a public information officer.

- An advisory council subcommittee on communication and warning should be utilized in coordinating communication resources in the region.

- Substate/regional planning agency staff should be used in aiding research and applications of cost-effective communications systems and in coordinating resources of the region.

- A comprehensive equipment, services, and personnel resource listing should be formulated by political subdivision and compiled to reflect regional capabilities.

- An advisory council subcommittee on resources and coordination, representative of the region served, should be utilized in preparing resource listings.

- Substate/regional planning agencies should be utilized to provide technical assistance in developing coordinated resource listings for local governments.

- Evacuation plans should be developed for each county, burrough or parish (and municipality where necessary or practicable) which coordinate with adjacent political subdivisions and all groups/agencies providing assistance. Plans should be developed by county government in urban areas to include municipalities within the county and in coordination with regional planning commissions in non-metro areas.

- Evacuation plans should use the most accurate methods and data available in determining egress routes and should be updated by the county and substate/regional planning agency annually.

- An advisory council subcommittee should be used in coordinating plans and resources for effective evacuation.

- Federal and state emergency management agencies should extend capabilities by using substate/regional planning agencies to provide technical assistance to local governments in evacuation planning.

- A coordinated regional shelter program should be developed by local civil defense organizations. This program should include results of inventories by local political subdivision.

- An advisory council subcommittee on shelters should be used in formulating a shelter program.

- Substate/regional planning agencies should be utilized as resource groups and technical assistants to state and local governments in formulating shelter programs.

- Local units of government should develop comprehensive guidelines for post-disaster clean-up and recovery programs which are coordinated with other governments in the region.

- An advisory council subcommittee should be used in developing a post-disaster clean-up and recovery program.

- Substate/regional planning agencies should be used to assist state and local government in post disaster clean-up and recovery planning and services.

- Local governments should develop and implement a hazards awareness program, including printed material and public presentations. This program should involve all segments of the community and directly address special populations.

- The news media should be used as a consultant in developing a public hazard awareness campaign.

- Substate/regional planning agencies should be used by state and local government as a coordinator and technical assistant in developing educational programs for disaster awareness.

- Communities should develop and distribute hazard awareness maps for public information.

- Local government should be provided map resources identifying hazards and response tools.

- A standard format for hazards mapping should be developed to include uniform symbols (e.g. evacuation routes, shelters) and design guidelines, where practicable, for scale, color, and typeface. Such maps should be created for use at the local, regional (multi-county), state and national scale and produced by substate/regional planning agencies and state and federal emergency management agencies.

- Substate/regional planning agencies should be utilized to provide technical assistance to local government in mapping, thereby, building the capacity of state and local emergency service agencies.

- States should provide greater financial and technical assistance to local governments to encourage hazard mitigation activities.

- Substate/regional planning agencies should be used by state and local governments as a technical assistant and liaison in more intense hazard mitigation efforts.

- Comprehensive land use plans and community development plans should contain a hazard mitigation element to identify implementation alternatives.

VII. COORDINATION

To achieve maximum involvement of all groups, it is important to identify the planning activities undertaken and the responsibilities of various agencies within the state. As a case study, Georgia's coastal area was used in identifying existing disaster response plans and groups/agencies with designated roles in disaster preparedness, recovery, and response.

Research and Findings

In Georgia it was found that at least 17 different plans existed in the coastal area. No means for coordination was specifically set out for the plans. Additionally, there appeared to be no formal means or criteria for ensuring regular revision of all existing plans. Elements of each plan were similar in some cases but not consistently the same in all. In summary, many of the basic tools for a comprehensive disaster preparedness program exist within the array of plans described, but were not put to work in a consistent manner cognizant of regional needs.

A total of 23 Georgia state agencies have been identified in the Georgia Natural Disaster Operations Plan (NDOP) as respondents to local requests for assistance. Additionally, approximately fifteen federal agencies, in total, were identified as having some role in disaster preparedness, response, or recovery.

Under various conditions, local governments can receive assistance from these agencies. For example, state aid is available when local resources have been exhausted. Federal aid may be provided when state resources are exhausted. Certain types of assistance may be available whether or not a Presidential declaration has been made and others will be available only with such a declaration. Thus, it is critical that local governmental officials understand what services are available to them and under what circumstances. In terms of the capability for delivery of services to local government, further detailed research is required to define specific services provided.

Conclusion

A mechanism for coordinating basic tools can be provided through the advisory council on disaster preparedness and through the use of existing substate/regional planning agencies. Such agencies can coordinate local and state plans for optimum use at the local and regional level. They can also coordinate various state programs and various federal programs for use at the local level. Disaster related programs and the coordination of these are a likely extension of existing regional planning commission services.

Recommendations:

- Each coastal county should develop a hurricane response plan as part of a comprehensive disaster preparedness program. This plan should be coordinated with all appropriate plans in the area.

- Each inland county should develop emergency response plans as part of a comprehensive disaster preparedness program coordinated with all appropriate plans in the area.

- Business and industry should be strongly encouraged to develop in-house emergency response plans coordinated with appropriate city, town or county plans.

- State agencies and military installations should develop emergency response plans in close coordination with state emergency management agencies and appropriate city, town or county plans.

- Each plan should include, at a minimum, these elements: (1) training/education, (2) communication/warning, (3) inventory of resources/coordination/emergency services, (4) evacuation/transportation, (5) shelters, (6) clean-up/recovery.

- A regional advisory council on disaster preparedness should be utilized to insure coordination of planning tools and written plans developed in the region.

- Mutual aid agreements should be formulated between agencies and units of government to ensure coordination and emergency service support.

- Substate/regional planning agencies should be used by state and local governments to provide technical assistance in developing disaster preparedness plans.

VIII. APPLICABILITY TO ALL DISASTERS

The tools available to local governments in preparing for disasters of all types are quite basic. They consist of the advisory body (as described in the "Advisory Council and Subcommittees" section) and the following:

1. Plans.
2. Maps.
3. Educational and public awareness programs.
4. Mitigation activities.

The processes used to arrive at each are the same for any disaster. Solutions to specific problems will be the only variable.

Research and Findings

It has been determined that local government is the first "line of defense" against a disaster occurance. It has also been determined that disasters are not usually site specific problems, but, more often, regional in nature. Most local governments, then, share the problem and the solution should be representative of the region as a whole.

Therefore, an advisory council on disaster preparedness representative of local governments in any region, can guide the development of any disaster preparedness program. Formation will involve identification of primary and support responsibilities in response to the hazard in question.

Plans

The components of written response plans will basically be the same for all disasters. There will be added considerations, but six basic elements serve as a foundation. A subcommittee for each can help guide development of a comprehensive plan.

The six basic planning elements are:

1. Training and Education. Training for responding personnel will be necessary regardless of the type of disaster. Trained response is just that. Obviously, the type of disaster to be dealt with will have impact on the content of the training program.

2. Communication/Warning. Communication and warning will always be necessary as long as there is population in danger. Types of communications and warning systems may vary depending on the type of emergency.

3. Inventory of Resources/Coordination/Emergency Services. An inventory of resources is good management in any situation. Know what the options are. Make certain they are dependable resources. Local governments should maintain a resource listing of all emergency equipment, service, and personnel. The listing should be revised regularly and should be specific.

4. Evacuation/Transportation. If evacuation is a necessary response, egress routes either out of a building, a city, or a county should be specifically identified based on carrying capacity and structural adequacy. Problems resulting in the blockage of smooth traffic flow (pedestrian or vehicular) should be anticipated. The evacuation plan should be tested, when possible, in a "fire drill" or similar drill.

5. Shelter. A shelter plan is a part of all disaster plans. A current listing of shelter locations must be maintained recognizing that different disasters will require different shelter criteria.

6. Clean-up and Recovery. Clean-up and recovery procedures may vary depending on the emergency. However, the process of coordinating forces and equipment to execute recovery efforts will be the same.

Education and Public Awareness

Basic tools in implementing hazard awareness campaigns for the public include those stated previously in the "Elements of the Program" section. For example, the same groups can be used in spreading the word about nuclear preparedness efforts as are used in flood preparedness efforts. All can be accomplished through regular, ongoing efforts or special periodic activities. Civic groups and the news media, as well as professional organizations, are especially valuable vehicles for such a campaign. Special population concentrations and schools should be addressed by special presentation.

Mapping

In mapping for disaster prearedness, the risk area, jeopardized population, or location of the hazard itself may be identified. Whatever the case, the first step is in obtaining the base map. The base map will be chosen with regard to information necessary to properly identify the hazard in question.

Suppliers include:

1. U.S.G.S.
2. NOAA, NOS.
3. DOT.
4. Substate/Regional Planning Agency.
5. Department of Natural Resources (DNR).
6. Bureau of Land Management (BLM).

7. Corps of Engineers.
8. FEMA, FIA.
9. Forestry Commission.

If there is need for special mapping, the next step is to locate a source of technical assistance. Mapping assistance can be found through:

1. Substate/regional planning agencies.
2. County and municipal engineering or tax offices.
3. Private consultants.
4. State agencies such as DOT and DNR.
5. The Corps of Engineers.
6. Colleges and universities.

In reproduction and actual printing, the options are similar to those listed in the mapping section. They include basically any group that maintains in-house printing facilities. Local governments may be able to negotiate an arrangement with any of the following:

1. Regional planning agency.
2. Colleges or universities.
3. Schools.
4. Private industry.
5. DOT, DNR or other state agency.
6. Corps of Engineers.
7. Local newspaper.
8. Commercial printer.

Mitigation

Mitigation, in general, is necessary to protect existing development and associated population, to protect fragile environments, and to reduce the financial loss incurred. The measures employed for mitigation are far reaching and include all types of disasters.

Four alternatives are the same for all disasters:

1. Protect existing development from the hazard.
2. Remove or correct existing development to prevent it from being damaged by the hazard or remove or correct the hazard source itself, if possible or practical.
3. Discourage development in the hazard area.
4. Regulate land use in the hazard area or regulate the hazardous use itself.

Conclusion

The same basic preparedness tools available to local governments apply to all types of disasters.

1. Create an advisory group representative of the region to be served.
2. Plan for scheduled response to possible hazards.

3. Develop and implement an education/public awareness program to train public officials and citizens how to respond to a disaster.
4. Map hazard related data.
5. Implement programs to mitigate the effects of a disaster.

As discussed in the previous section, substate/regional planning agencies are a viable mechanism for providing direct technical assistance to state agencies and local governments in carrying out the program elements in any disaster situation.

IX. TRANSFERABILITY FOR USE AS A NATIONAL MODEL

In order to be effective and transferable, any "model" document or program must be accompanied by specific methods for implementation. The most innovative idea may not be used if it is not marketed.

Research and Findings

National Interest Groups

One of the most effective means of marketing a model program with national implications is to use national interest groups as a vehicle for transfer. In terms of disaster preparedness and regional/local implications, such groups include, but are not limited to:

National Association of Regional Councils (NARC)
National Association of Counties (NACo)
National Association of Development Organizations (NADO)
American Planning Association (APA)
Council of State Governments
National League of Cities
U. S. Conference of Mayors
International City Managers Association (ICMA)
International Association of Police Chiefs
International Association of Fire Fighters
National Fire Protection Association
National Sheriff's Association

Through annual gatherings as well as other communicative mechanisms, these organizations provide a forum for their members to discuss common areas of interest, problems, and more effective ways of doing their jobs. All of the organizations directly touch the local governments responsible for disaster preparedness, response, and recovery. This is a market place for offering problem solving techniques and the place for expanding existing capabilities.

In addition to the groups cited above, such centers as the National Hurricane Center and Natural Hazards Research Center at the University of Colorado, the National Association of Flood Plain Managers, and Coastal Regional Information Centers (RCIC's) provide information to local, state, federal government as well as other groups.

One of the primary tools for transferring information for use by others is a comprehensive training packet. Such a packet could be used as support material for presentations at conferences, seminars, and training sessions. The training packet for disaster preparedness should contain items such as:

1. A checklist of key agencies (federal, state, local) involved in emergency preparedness and response.

2. Methods used in:
   A. Developing evacuation maps.
   B. Working with "host" localities and others in areas adjacent to primary disaster areas.
   C. Developing educational programs.
   D. Setting up response teams.
   E. Formulating plans.
   F. Developing land use ordinances for mitigation purposes.

3. Examples of:
   A. Evacuation maps.
   B. Educational material.
   C. Plans (local).
   D. Model ordinances for mitigation purposes.

State and Federal Agencies

Emergency management agencies in all states can use the comprehensive model for disaster preparedness and the technical assistance of substate/regional planning agencies to build their capabilities. Substate/regional planning agencies exist in all states, making their use as a technical arm of state emergency management agencies a viable alternative. As stated previously, it was found that 40 percent of the states surveyed currently use substate/regional planning agencies in some way. Specific uses were evacuation planning, data collection, local review of state assisted response plans, provision of map resources, and assistance in the NFIP. A total of 68 percent of all states indicated functions for regional agencies, in addition to those now performed, would be useful in increasing state capabilities. These additional functions could include providing technical assistance in preparing plans and developing education and awareness programs.

State agencies in addition to emergency management agencies could use the model, as well. Agencies such as the DNR, DOT, and Department of Human Resources (DHR), to name a few, are required to maintain an emergency coordinator and emergency plans. State agencies can use the model just as local governments can.

The process and tools described in this document are also appropriate for use by federal agencies involved in disaster, preparedness, response, and recovery. Federal agencies providing such services are:

1. U. S. Department of Agriculture (USDA).
2. HUD.
3. Small Business Administration (SBA).
4. U. S. Army Corps of Engineers.
5. U. S. Army.
6. U. S. Navy.
7. Federal Bureau of Investigation (FBI).
8. NOAA/NWS.
9. Economic Development Administration (EDA).
10. Federal Emergency Management Agency (FEMA).

Each agency listed above has some program or plan of action for times of emergency. Though the elements of an emergency plan will not be the same for all agencies, part or all of the basic format can be used. For example, the Army, Navy, and USDA Forestry Commission could employ all elements listed here for a disaster plan. On the other hand, in some instances, only a portion of the elements may be applicable. For example, HUD's primary consideration would be temporary housing in the recovery stage and the FBI would be concerned with investigation in the recovery stage.

Coordination of resources certainly applies to all agencies, as does communication and training. The comprehensive and coordinated nature of a written plan is an intangible asset but produces tangible results.

The mapping element of the program will apply nationwide due to the fact that resources of many agencies are mapped. For example, HUD would need to know where staging areas are located in order to provide for temporary housing. The Navy and Army would benefit from storm surge model adaptation if they are located on the coast such as Kings Bay Submarine Support Base in Georgia and a similar base in Kitsap County in Washington. A uniform symbol approach to mapping is not a new idea but could produce extreme benefits to all when extended to hazards awareness maps.

NOAA will benefit directly from work accomplished in the mapping effort of this program. That agency has determined that continued production of the STEM series is not possible without the involvement of state or local groups. Cooperative efforts in updating such maps would allow the continuation of the series.

The education and awareness element should be of concern to all federal agencies as well as state and local. Public knowledge about the operation or assistance of federal agencies simply makes the federal role easier to implement in time of emergency. Many of the same tools can be used by federal agencies as well as in substate/regional programs.

Mitigation is of special interest to all federal agencies. Disaster assistance is costing the federal government more money each year and FEMA is exploring ways to reduce loss. NOAA is also particularly active in hazard mitigation through the NWS, CZM, Sea Grant and its recent Coastal Hazards Initiative program. The model described here would be a useful tool not only in identifying specific mitigation alternatives but in viewing the program in total as a mitigative action to reduce the national loss of lives and dollars. In conjunction with NOAA's Coastal Mapping and Coastal Hazards Workshops, the entire model program could be transferred to other geographic areas.

The Corps of Engineers is constantly working to mitigate adverse effects in flood areas. For example, the Fort Worth, Texas district recently published a notice of intent to prepare a draft environmental impact statement of flood protection activity in Texas. The alternatives and tools developed in this model program could be implemented by the Corps in other areas.

Conclusion

The regional alternative for implementation of this program is an attractive option for all agencies. Most federal agencies use national regions to implement programs. Many federal and state agencies currently use substate/regional planning agencies as a source of direct technical assistance to further carry out their programs. Benefit can be realized by federal, state and local groups in using substate/regional agencies to provide assistance throughout the country in disaster preparedness.

Recommendation:

The "Coordination, Education and Mitigation Model for Disaster Preparedness in Coastal Areas" should be transferred to other geographic areas through FEMA and state emergency management agencies with the assistance of other state and federal agencies and national interest groups.

X. STAFF/FINANCIAL RESOURCES NECESSARY TO UNDERTAKE THE PROGRAM

Budget for Implementation

The financial resources necessary for a regional agency to undertake the model program will vary from agency to agency, depending on current level of staff and agency work program. The budget presented in this section assumes that the comprehensive disaster preparedness program being undertaken by the substate/regional agency is a new program for the agency. A two-year "start up" period is projected for program initiation with maintenance of the program to continue one to three years after the initial two-year period.

	Year One	Year Two
Personnel Costs		
Disaster Preparedness Coordinator, Planner, 5% Planning Director, Cartographic and Secretarial Assistance	$ 31,804	$ 34,108
Fringe Benefits	8,905	9,550
Total Personnel Costs	$ 40,709	$ 43,658
Travel	3,000	3,500
Printing	4,000	7,500
Other Direct	1,000	500
Inkind Services	6,000	6,000
Indirect Costs	29,310	31,434
Total Costs	$ 84,019	$ 92,592

Staff Resources Needed

Two full-time staff positions are needed for the implementation of the comprehensive disaster preparedness program. These positions, a disaster preparedness/response coordinator and a disaster preparedness/response planner, will require supervision by a planning director, senior planner or executive director; cartographic; graphic; and secretarial support.

Possible Funding Sources

Several alternative funding sources have been identified for providing financial impetus for implementation of a comprehensive disaster preparedness program by a substate/regional planning agency. It is probable that a "package" approach to funding will be the most practical and viable.

Below are listed the possible funding options to consider in the initiation of a regional disaster preparedness effort. A combination of the federal, state, and local resources is suggested, including cash and/or in-kind services:

(1) Local funding (i.e. direct financial contribution from local units of government).

(2) State support through agencies such as emergency service agencies, DNR, DHR, DOT.

(3) Federal support through agencies/programs such as HUD ("701" comprehensive planning program), CZM, Sea Grant, FEMA, Department of Health and Human Resources.

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