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STATE OF MAINE

HAZARD MITIGATION PLAN

DECEMBER 1987

Submitted in accordance with the requirements
of section 406 of the Federal Disaster Relief Act
(Public Law 93-288) of 1974 as amended

DEVELOPED AND WRITTEN JOINTLY
BY THE
DEPARTMENT OF ECONOMIC AND COMMUNITY DEVELOPMENT
MAINE EMERGENCY MANAGEMENT AGENCY
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B. Hurricanes and Coastal Storms

Situation: The Maine coast experiences both hurricanes and coastal storms that have the potential to cause property damage and threaten lives. Severe coastal storms create threatening situations more frequently than hurricanes. The "one hundred year storm" event used by FEMA in coastal floodplain mapping is a coastal "northeaster" storm. In the winter of 1978 a vigorous "southeaster" produced a storm surge that reached levels expected of a 100-year storm.

The February 1978 storm (see the Disaster History Table) created the second most expensive presidential declared disaster in state history. Coastal storms and hurricanes occur with predictable odds over time and thus make the risk to coastal properties real. For example in the 70 year lifetime of a building there is a cumulative chance of 50% that the structure will experience a 100-year storm. Since the 1978 storm a considerable amount of construction has taken place in shorefront areas that could be affected by either a 100-year storm or a hurricane. The areas most at risk should be identified in order to better plan future mitigation efforts.

One of the state's most significant hazard mitigation policies regulates the location of new structures in coastal sand dune areas. The Sand Dune Law (38 M.R.S.A., Sections 471-478) address the siting of structures in areas vulnerable to storm damage. Efforts by the Board of Environmental Protection to improve the

Sand Dune Rules to further mitigate hazards in this physical environment are continuing.

Another area of mitigation is the National Flood Insurance Program which provides standards for location of structures in flood prone areas.

An Act to Enhance the Sound Use and Management of Maine's Coastal Resources (Public Law 794, July 16, 1986) also recognizes the risks to coastal properties: State, local, and federal agencies are to "[d]iscourage growth and new development in coastal areas where, because of coastal storms, flooding, landslides, or sea-level rise, it is hazardous to human health and safety." (Sec. 11, 38 M.R.S.A. c.c. 19, s.s.1801.) Also included under this act is a limitation on state expenditures in the coastal barrier resources system, an area known to be of high risk. At present these locations are listed in the Act. They need to be mapped in detail in order to better define their perimeters and areas of greatest hazard.

In summary, the existing situation for mitigation is through environmental planning and regulation. Better technical tools are necessary to identify high risk areas, without them it will be difficult to plan a strategy to mitigate the hazards from coastal storms and hurricanes.

<u>Vulnerability</u>: FEMA has completed detailed mapping for much of

the coast and has identified high hazard areas. Coastal geology and geography are the most important controlling factors governing the vulnerability of coastal regions. Low-lying areas and sediment-bordered shorelines are highly vulnerable. Rock headlands and sheltered coves are of low vulnerability due to resistance to change and protection form direct wave attack. The most vulnerable coastal areas are beaches, dunes, coastal bluffs, and till headlands. The common occurrence of these landforms and the high population density of southern Maine make that region the most vulnerable geographic region of the Maine coast.

The most vulnerable structures are those that regularly receive wave attack such as seawalls and wharves. Structures built on wharves are commonly flood prone; many are located in V-Zone flood hazard areas. Coastal roads in many locations are low-lying and subjected to both flooding and undermining due to wave action. Roads to some peninsulas may become flooded and lead to the temporary formation of islands during storm events.

Coastal communities removed from the waterfront are less vulnerable to flooding and wave damage but, like shoreline locations, are subjected to high wind speeds and associated dangers such as damaged utility lines and falling trees.

Resources: Human resources exist within the State and local government structure to cope with natural disaster along the

coast. The Maine Emergency Management Agency and the Bureau of Public Safety have roles in this process. Municipal governments differ considerably in ability to mitigate a coastal disaster. Following Hurricane Gloria in 1885, Maine Emergency Management Agency compiled a report of the response to the threat (see the Bibliography).

Financial resources for disaster planning and mitigation are provided to the Maine Emergency Management Agency from FEMA. The National Oceanic and Atmospheric Administration's Office of Ocean and Coastal Resource Management (OCRM) funded the mapping of coastal hazard areas in coastal sand dune areas in 1986. These funds were obtained through a competitive grant proposal to the Maine Coastal Program of the State Planning Office. The Office of OCRM has indicated that future funds for hazard mapping will not be available and that it is the State's role to conduct such studies. Additional mapping assistance and Sand Dune Rule Revisions have been funded by the Maine Department of Environmental Protection in 1987. FEMA has been upgrading flood hazard maps along the coast and will continue the process, dependent upon funding.

Mitigation Measures:

1. Work Element - Interagency Hazard Mitigation Team (IHMT)

Background - Identification and planning for storm damage reduction, including coastal and riverine flooding should be ongoing and involve officials from the State and local levels of government.

Recommendation - Develop as a subcommittee of the Land and Water Resouces Council a permanent interagency hazard mitigation team for pre- and post-disaster mitigation planning; and also to facilitate interagency recommendations for hazard mitigation.

Lead Agency - SPO (LWRC)

Funding - No additional funds.

Implementation Schedule - Meeting of team semiannually.

Estimated Cost - From existing department budgets.

2 Work Element - Develop and distribute a coastal annex to the state-wide hazard mitigation plan.

Background - A comprehensive analysis of coastal hazards does not exist. One task of the

Interagency Hazard Mitigation Team should be to identify these hazards and prepare a plan annex. This annex would then be distributed to coastal communities to increase their awareness and guide their actions for mitigation. The reports findings should also be used to guide new State actions in coastal hazard mitigation.

Recommendation - Evaluate risks of coastal hazards, rank and recommend solutions for risk reduction.

Lead Agency - SPO, DECD

Funding - State

Implementation Schedule - Recommendations from the IHMT or subcommittees annually.

Estimated Cost - $2000 for reporting and distribution

3. Work Element - Determine rates of shoreline change

Background - Erosion threatens many coastal areas. And inventory of erosion/accretion rates will

identify areas of greatest risk in coastal storms and hurricanes.

Recommendation - Begin monitoring change through beach profiling and compare data to historical data bases. Map results on existing coastal hazards maps as an overlay. Map coastal barriers identified in P.L. 794. In second year extend mapping to bluffs.

Lead Agency - Maine Geological Survey

Funding - Federal

Implementation Schedule - Survey results available annually, coastal barrier maps December 1988.

Estimated Cost - $17,500 annually first two years, $10,000 for subsequent annual monitoring.

4. Work Element - Draft legislation to address deficiencies in coastal hazard mitigation identified by the Interagency Hazard Mitigation Team in work element #2 above.

Background - Due to the limited scope of existing regulations, improvements may be made in existing policies and new policies should be developed.

Recommendation - Outline deficient areas, such as building codes, coastal bluff erosion areas, etc., that should be improved. Review existing regulatory structure and needs for new legislation. Draft changes and introduce appropriate legislation.

Lead Agency - SPO

Funding - State

Implementation Schedule - Spring 1989

Estimated Cost - Staff Time

5. Work Element - Develop the SLOSH storm-surge model of the Boston Bay Basin

Background - The National Weather Service's storm-surge

model SLOSH (sea, lake and overland surges from hurricanes) provides an advanced estimate of inland flooding from hurricanes in areas with irregular coastlines. The results for SLOSH Basin No.1 1, Boston Bay, are not available.

Recommendation - Contact groups responsible for providing SLOSH analyses (FEMA, NWS) to request that the model be run.

Lead Agency - DECD/State FEMA Floodplain Coordinator

Funding - FEMA, NWS

Implementation Schedule - 1988-1989

Estimated Cost - Staff time

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