HAZARD MITIGATION PLAN
ANNEX
FOR
SPRAGUE, CONNECTICUT

An Annex of the
Southeastern Connecticut
Regional Hazard Mitigation Plan

PREPARED FOR:

Southeastern Connecticut
Council of Governments

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I. INTRODUCTION

A. Setting

The Town of Sprague is 13.4 square miles in area. It is located in north-central New London County approximately 6 miles north of Norwich, Connecticut. Sprague comprises the Villages of Baltic, Versailles, and Hanover. The town is bordered by the Town of Scotland to the north, the Town of Canterbury to the northeast, the Town of Lisbon to the east, the City of Norwich to the south, the Town of Franklin to the west and the Town of Windham to the northwest.

Sprague is a suburban community with a 2000 U.S. Census population of 2,971. Each village has its own post office. In Baltic, residential, commercial, and industrial development is generally concentrated along the Shetucket River and Beaver Brook, near Routes 97 and 207. In Versailles, development is generally concentrated in the vicinity of Versailles Road, Papermill Road, Inland Road and other areas along the banks of the Little River. The Village of Hanover is located north of Baltic on Baltic-Hanover Road and includes development in the vicinity of the Little River, Adams Brook, and the Hanover Reservoir.

Elevations in the community range from 460 feet NGVD along the northern corporate limits, 1.5 miles east of the Shetucket River, to 40 feet NGVD at the southern tip of the community, where the Shetucket River flows out of Sprague.

B. Purpose of Annex

The purpose of this annex is to provide hazard risk assessment, capability assessment, hazard mitigation measures, and a hazard mitigation project ranking for the Town of Sprague. Hazards such as earthquakes and windstorms which affect the entire region are addressed in the Southeastern Connecticut Council of Governments Regional Hazard Mitigation Plan.

C. Plan Development Process and Public Involvement

The Regional Hazard Mitigation Plan and this annex were developed through a series of meetings and the completion of written questionnaires, personal interviews, and workshops. To provide oversight of the plan development process and maximize local involvement, all member communities in the region and the two tribal affiliate members were invited to appoint a representative to serve on the Hazard Mitigation Steering Committee. Committee members and chief elected officials received notices of all the committee meetings and were encouraged to attend. Meeting notices and agendas were also sent to area media and to town and city clerks for posting in each community. Steering committee meetings were held in public at the Southeastern Connecticut Council of Governments office in Norwich. Three steering committee meetings were held during the development of the hazard mitigation plan. Verbal reports on progress were given to monthly meetings of the Southeastern Connecticut Council of Governments, which are routinely attended and covered by area press in local newspapers. Articles describing the planning process have appeared in the three issues of the SCCOG Quarterly Newsletter since March, 2003. This newsletter is mailed to 285 officials, organizations, and media within the region.

II. HAZARD RISK ASSESSMENT

A meeting was held with representative officials of the Town of Sprague on August 14, 2003 to develop a risk assessment for the town. Based on the results of this meeting and additional risk assessment research, it was determined that a significant hazard in Sprague is flooding.

The rivers that cause the greatest flood hazard are the Shetucket River and Little River. The Shetucket River is formed by the confluence of the Willimantic and Natchaug Rivers south of Willimantic, Connecticut. The river flows south to Norwich, where its confluence with the Yantic River forms the Thames River. The Shetucket River has a drainage area of approximately 1,264 square miles and is approximately 18 miles long. Primary tributaries to the Shetucket River are the Quinebaug, Natchaug, and Willimantic Rivers.

The Little River has a drainage area of approximately 46 square miles and flows southwest through Sprague to its confluence with the Shetucket River.

The history of flooding in Sprague indicates that flooding may occur during any season of the year. Severe floods have occurred during the summer and fall as a result of hurricanes. Significant flooding of the downtown Baltic area has occurred due to ice-dams which form on the Shetucket River during cold winters. Flooding has also occurred in the early spring when the ground is frozen and infiltration is minimal.

Two major floods occurred in Sprague in March 1936 as the result of tropical storms. The flood of record for the Shetucket River occurred in September 1938 as the result of a hurricane. This hurricane is often referred to as the “New England Hurricane.” Severe flooding also occurred along the Shetucket River as the result of Hurricane Diane which occurred on August 19, 1955. Damage from the 1955 flood was reduced by the flood control dam at Mansfield Hollow Lake which was completed in March 1952.

Town officials raised several concerns regarding flooding in Sprague. During the winter, sections of the town along the Shetucket River have flooded due to “ice-damming.” Town officials have expressed concern regarding trees and brush that have fallen into the river and may be contributing to the “ice-damming” effect.

Buildings located in flood hazard areas are primarily residential but also include some commercial, industrial, and critical facility structures. Most of the structures that are threatened by flooding are located within the 100-year floodplain.

Sprague has a history of flooding and there is no formalized program currently in place to identify the location or the number of structures that are susceptible to flooding. Such information would be valuable in directing hazard mitigation efforts to locations with the greatest risk. A potential hazard mitigation project would involve the review of all existing available data regarding flood hazards and the preparation of an inventory and assessment of structures at risk in the flood hazard areas.

Such an inventory program would be the first step in completing a Flood Audit, which would provide early flood warning, guidance and technical information regarding flood risks to property owners, as well as prioritize future property protection projects. The completion of a Flood Audit would be an important step in the National Flood Insurance Program Community Rating System by which towns can qualify for a reduction in flood insurance rates.

A. Residential

Based on a review of the Flood Insurance Rate Maps, topographic maps, and aerial photographs, residential structures that are subject to flooding during significant flood events are primarily situated along the Shetucket River.

Residential structures along the Shetucket River in the area of Brookside Avenue, River Street, First Avenue, and the section of Route 97-Main Street/Baltic Road from Second Avenue to approximately Lillibridge Road are in flood hazard areas.

B. Commercial/Industrial

There are areas of concern for commercial and industrial properties located within the flood hazard area. One area is located in the downtown area of Sprague where Beaver Brook flows into the Shetucket River. This area has historically been subjected to flooding and could potentially be impacted by future flooding thus exposing many commercial structures to significant damage.

Historically, the majority of the town's industry was located along the banks of the waterways which flow through the town. Currently, the town is less industrialized and thus less exposed to hazards affecting the manufacturing sector. However, Sprague Paper Company still operates several paper mill facilities within the town limits that could be affected by significant flooding.

Town officials raised concerns with several dams in town, some of which are privately owned. In the past, many dams were built to produce power to serve the industrial facilities situated along the town's rivers. The remaining dams include several state owned dams and the Papermill Pond Dam and the Versailles Dam, which are owned by the Sprague Paper Company. The risk associated with each of these structures needs to be evaluated in order to ascertain the degree of hazards posed during a significant storm event.

C. Critical Facilities

A review of the critical public facilities in the Town of Sprague indicates some public facilities are located in flood zones. Blanchette Field, one of the town's parks is located in the flood zone. The town constructed a flood control berm adjacent to the Shetucket River to help stop the fields from being flooded.

Another area of concern is the municipal community water supply. Water supply wells are located near Blanchette Field. The system is considered marginal for the town's demand. The former Baltic Reservoir remains "inactive" because it needs structural upgrading including repairs to the dam. This waterbody could once again be utilized as a water supply source.

D. Transportation Corridors

The Town of Sprague has several major transportation routes through the town such as Route 97, Route 207, and Route 138. The Providence and Worcester Railroad line runs through the town.

Several roads through Sprague have sections that cross floodplains and have a potential to flood during severe storms. Besides a long stretch of Route 97-Main Street/Baltic Road between Second Avenue and Lillibridge Road, several other roads are located in flood areas. Parkwood Road and Potash Hill Road near Little River and Main Street and Hanover-Versailles Road along Adams Brook have a potential to flood. During flooding these flood areas may impact emergency vehicle travel and thus the town's ability to respond to emergencies.

Town officials have also expressed concern with increased thru-traffic in Sprague. Specifically, the town is concerned with the transportation of hazardous materials over their roadways and their ability to respond to a major incident regarding a release of such materials.

III. HAZARD MITIGATION MEASURES

The following sections provide a brief description of the types of hazard mitigation measures and programs that are available to address the natural hazards that exist in Sprague.

A. Prevention

Hazard prevention includes identification of risks and the use of land-use regulatory and other available management tools to prevent future damage. The Town of Sprague has planning and zoning tools in place that incorporate floodplain management. The town's planning and zoning regulations, inland wetlands and watercourses regulations, and the building department's enforcement of the Connecticut Basic Building Code are all important existing regulatory mechanisms that address hazard prevention and incorporate floodplain management.

The following are examples of how hazard prevention can be accomplished through existing programs:

1. Planning and Zoning

   Planning and Zoning Regulations can be tailored to be consistent with hazard mitigation planning. Establishment of Flood Prone Conservancy Districts, Coastal Resource Zones, and River Corridor Preservation Zones are all techniques that can potentially be employed to limit additional development in hazardous locations.

2. Open Space Preservation

   Community Planning that includes open space acquisition and preservation sections can be established or revised in a manner that is consistent with hazard mitigation planning. Acquisition of floodplain and river corridor properties should be encouraged as a municipal priority.

3. Floodplain Development Regulations

The modification of floodplain management regulations to include more restrictive development standards is consistent with hazard mitigation planning. The National Flood Insurance Program Community Rating System gives credit to communities that exceed the minimum floodplain management requirements of the National Flood Insurance Program. Requirements include elevating structures higher than the 100-year base flood elevation, which is an example of a more stringent standard.

4. Stormwater Management

Stormwater management regulations that limit any potential increase in the state of discharge of stormwater and that preserve floodplain storage are examples of the use of stormwater management in a manner consistent with hazard mitigation planning.

5. Wetlands Protection

Wetlands areas are generally also critical flood storage areas. By limiting wetlands development not only are important natural resource areas protected but additional floodplain development is also limited.

6. Erosion and Sediment Control Regulation

Effective implementation of sediment and erosion controls include utilization of detention basins and use of other Best Management Practices to slow the velocity and limit increase in runoff. Strict adherence to these requirements are effective hazard mitigation tools.

B. Property Protection

Property protection measures can address hazards at a single structure or can include multiple structures.

The following list identifies common property protection measures:

1. Relocation
2. Acquisition
3. Building Elevation
4. Utility Protection
5. Flood Proofing

Additional descriptions of property protection measures are provided in Appendix A in the Regional Hazard Mitigation Plan.

C. Emergency Services

Emergency communication is a critical aspect of the hazard response programs currently in place in Sprague. Emergency Services hazard mitigation measures can be combined with other types of measures to form successful projects, or remain as stand-alone projects.

The major utilities that provide service to the town follow similar procedures. The Connecticut Light and Power Company has emergency operation centers which become operational in the event of any emergency that could impact the utilities.

The interagency communication between the town and independent utilities requires continued coordination to assure the critical communications link between the town operations and the utilities is effectively maintained. A need for improved and continued coordination has been identified during this study.

Aspects of emergency services typically addressed in hazard mitigation include the following:

1. Emergency Communication
2. Flood Warning
3. Flood Response
4. Critical Facilities Protection

D. Structural Projects

Structural projects include utilization of the flood control strategies that have been and continue to be applied throughout Connecticut. The potential environmental impacts of structural projects are often a concern.

Structural projects that can be included in hazard mitigation planning include the following:

1. Levees/Floodwalls
2. Bridge and Culvert Replacement
3. Channel Modifications
4. Storm Sewer Improvements
5. Structural Project Maintenance and Repair

Any prospective projects which were identified during the course of assembling this plan are included in the hazard mitigation matrix in Appendix A of this annex report. Additional information on some types of structural projects is provided in Appendix A in the Regional Hazard Mitigation Plan.

E. Public Information

Public Information is another type of hazard mitigation measure which, like prevention and resource protection, can be most effectively implemented in conjunction with other hazard mitigation projects.

The Hazard Mitigation Committee has identified the need for a continued and expanded program of public information. Such a program could include providing educational information to the homeowners and business owners in the flood hazard areas. A public education and information component should be included in all hazard mitigation projects undertaken by the Town of Sprague.

The following list includes some common types of Public Information measures:

1. Map Information

   Development of hazard maps for public distribution or posting in public locations. This type of information is easily understood and assists in raising the public's awareness of the natural hazards that exist in their community.

2. Flood Audits

   For additional information regarding flood audits refer to Appendix F of the Regional Hazard Mitigation Plan.

3. Real Estate Disclosure

   This is a procedure where buyers and sellers of real estate are compelled to provide notice of known hazards affecting the property to be conveyed.

4. Public Library

   Libraries can be an effective location of a hazard information center. Town Halls and other public facilities can also serve as information centers. A wide range of hazard mitigation documentation should be compiled for review.

5. Technical Assistance

Local governments can provide technical assistance to homeowners and contractors regarding hazard resistant construction. An appropriate time for such assistance can be at the time of a building permit application.

6. Environmental Education

Private and public schools and adult education programs can offer environmental education classes that include hazard identification and hazard mitigation components.

IV. HAZARD MITIGATION PROJECT RANKING

Based on the hazard risk assessment analysis, the Hazard Mitigation Committee has developed a matrix of several hazard mitigation projects recommended to reduce Sprague's vulnerability to natural hazards. A matrix depicting potential hazard mitigation projects and a prioritized ranking is included in Appendix A.

Projects identified in the matrix have been prioritized based on the following criteria:

- Safety of the population
- Historical damage
- New development in high risk areas
- Value of property at risk
- Consistency with plan goals and objectives

The projects were also considered on how they relate to potential health risks, structural damage, access/egress for evacuation, and protection of structures that house people with special needs and residential areas housing a large portion of the town's population. For additional information on projects listed in the matrix and for a complete list of criteria used in the prioritization process, please refer to the text and attachments of the Regional Hazard Mitigation Plan.

V. IMPLEMENTATION, MONITORING, AND EVALUATION

The Southeastern Connecticut Council of Governments Regional Hazard Mitigation Plan and this associated community annex report were prepared with the understanding that potential funding sources may not be available within the time frame necessary to implement the recommended actions on a specific schedule. It is therefore necessary to incorporate into the plan a system of monitoring its progress and making necessary adjustments. In addition, the goals and objectives may need to be modified over time in order to meet the demands of a changing community. Accomplished activities will be eliminated, and new ones added.

The staff of the Southeastern Connecticut Council of Governments (SCCOG) serves as coordinator of the Hazard Mitigation Committee that provided oversight of the plan preparations. In accordance with § 201.6 (c)(4)(i) of the Interim Final Rule, it is recommended that the Committee meet on or before the fifth anniversary of the adoption of the plan to review the implementation progress as well as the goals, objectives, and actions outlined in the plan. With input from the Committee, SCCOG staff should prepare a report on the status of plan implementation. The report should include the following: a review of the goals and objectives of the original plan; a review of any disasters or hazards that occurred during the period; a review of each element or objective of the original plan, including what was accomplished the previous year; and recommendations for new projects or revised objectives.

FEMA also recommends that each of the local communities name a person as a local coordinator for the implementation and monitoring of the progress of the plan. This person would act as a contact for the Southeastern Connecticut Council of Governments and the State of Connecticut National Flood Insurance Program Coordinators during the grant application and cost-benefit analysis process.

The Town of Sprague Hazard Mitigation Projects			
Hazard	**Vulnerable Location**	**Mitigation Project**	**Priority**
Flooding	Downtown Baltic (Route 97)	Property Protection and Channel / Culvert Modifications	High
Ice-Dam Induced Flooding	Shetucket River and Beaver Brook	River Channel Maintenance Program	High
Private Dams	Baltic, Hanover, and Versailles	Dam Audit and Structural Assessment	High
Hazardous Materials Spills on Roadways	State Thru Roads	Improvements to Traffic Infrastructure and Emergency Response Training and Equipment	High
All Hazards	Town Wide	Evaluate the Hazard Resistant Nature of All Critical Facilities	High

The Town of Sprague Hazard Mitigation Projects			
All Hazards	Town Wide	Comprehensive Evaluation of Emergency Communication Capabilities Throughout Town	High
Hazard	**Vulnerable Location**	**Mitigation Project**	**Priority**
Flooding	Town Wide	Develop a Flood Audit Program	High
All Hazards	Town Wide	Review of TownTransportation Facilities to Identify Critical Risks	Medium
All Hazards	Town Wide	Implement a Reverse 9-1-1 System to Automatically Call Telephones Throughout Town, Relaying Important Information During an Emergency	Low
All Hazards	Town Wide	Distribute or Post Public Information Regarding Hazards in the Town	Low

The Town of Sprague Hazard Mitigation Projects			
All Hazards	Town Wide	Evaluate Emergency Shelters, Update Supplies and Check Communication Equipment	Low
All Hazards	Town Wide	Maintain Emergency Personnel Training as well as Maintaining and Updating Emergency Equipment and Response Protocols	Low
Hazard	**Vulnerable Location**	**Mitigation Project**	**Priority**
Wind Hazards	Town Wide	Evaluate and Consider Burying Power Lines Underground and Away From Possible Tree Damage	Low
Earthquake Hazards	Town Wide	Complete an Earthquake Survey of all Critical Facilities and Infrastructures	Low

The Town of Sprague Hazard Mitigation Projects			
Flooding	Town Wide	1)Complete Catch Basin Surveys to Identify Catch Basins in need of Maintenance and/or Replacement 2) Complete Culvert Survey to Determine Priority for Maintenance and/or Replacement Plan	Low
Fire Hazards	Town Wide	Complete a Survey of Fire Hydrants to Assess Vulnerabilities and Capabilities for Fire Protection Dry Hydrants should be Considered as a means for Emergency Equipment	Low