

**HAZARD MITIGATION PLAN
ANNEX
FOR
GRISWOLD, CONNECTICUT**

**An Annex of the
Southeastern Connecticut
Regional Hazard Mitigation Plan**

PREPARED FOR:

**Southeastern Connecticut
Council of Governments**

DATE: June 2005



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I. INTRODUCTION

A. Setting

The Town of Griswold is 37.6 square miles in area and is located in north-central New London County. It is bordered by the Towns of Canterbury and Plainfield to the north, the Towns of Lisbon and Preston to the west, the Town of North Stonington to the south, and the Town of Voluntown to the east.

Griswold is a rural community with a 2000 U.S. Census population of 10,807. It is characterized by its many rivers, lakes, and farms. Several large rivers flow through Griswold, which include the Pachaug River and Quinebaug River. The Borough of Jewett City is located at the junction of the Pachaug and Quinebaug Rivers in Griswold. Jewett City contains the most densely developed land in Griswold.

One of the largest bodies of water in Griswold is Pachaug Pond, where a State boat launch, a marina, and a campground are located. Pachaug Pond was formed by the Pachaug River and is fed mainly by the Pachaug River, Burton Brook, and Billings Brook.

Griswold contains two State Forests, the Pachaug State Forest and Hopeville State Forest. Hopeville State Forest has a campground, beach, boat launch, and many hiking trails. Many people travel to Griswold to hike the trails during the summer and fall months.

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 Griswold. 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 conducted with local officials on September 2, 2003 to develop a risk assessment for the Town of Griswold. Based on the results of this meeting and additional risk assessment research, it was determined that a significant hazard in Griswold is flooding.

The two main rivers that contribute to flooding in Griswold are the Quinebaug River and the Pachaug River. The Quinebaug River flows southwest from Massachusetts into Connecticut to its confluence with the Shetucket River, approximately three miles above Norwich, Connecticut. The Quinebaug River is approximately 62 miles long and the principal tributaries are the French, Five Mile, Moosup, and Pachaug Rivers. In Griswold, the Quinebaug River forms the western corporate limits. The Pachaug River flows through Griswold to its confluence with the Quinebaug at Jewett City.

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.

The Town of Griswold has no formalized program currently in place to identify the location or the number of structures that remain 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 Town of Griswold's Flood Insurance Rate Maps and topographic maps, residential structures that are subject to flooding during significant flood events are near the Quinebaug River. One area of concern along the Quinebaug River is near Arbor Road. There are several structures along the Quinebaug that are in flood hazard areas.

B. Commercial/Industrial

Griswold's main area of commercial and industrial development is in the Borough of Jewett City. As previously mentioned the confluence of the Quinebaug and Pachaug Rivers is south of Jewett City. Several other ponds such as the Aspinook Pond, Ashland Pond, and Clayville Pond border this commercialized area of Griswold. The developed areas in Jewett City appear to be free from flooding, which reduces the hazard potential.

C. Critical Facilities

The majority of Griswold's critical public facilities are located in the Borough of Jewett City and are not in flood hazard areas. However, one exception to this is the Griswold Fire Department, which is the town's emergency operation center as well as the emergency shelter during emergency situations. The fire department is located at 883 Voluntown Road (Route 138) at the intersection of Voluntown Road and Old Bethel Road and is in a flood area. This vulnerable flood area could result in delayed emergency response during severe storms and could affect emergency shelter for town residents. Local officials have also indicated a concern with inadequate emergency power generating capabilities in Griswold.

D. Transportation Corridors

Griswold has several major transportation routes, including Interstate 395, Route 201 and Route 138. A series of crossings of the highway have been constructed to allow passage of roadways under and over I-395.

There are several roads throughout Griswold which have the potential to flood. These roads include Bitgood Road, Route 138, Old Bethel Road, Norman Road, and Edmund Road along the Pachaug River. Other roads also of concern are Rhode Road intersected by Mill Brook, and Banjo Sullivan Road and Campbell Road along Crooked Brook. These roads could inhibit vehicle travel during severe storms. As previously mentioned a critical flood area is the Route 138 / Old Bethel Road intersection. The Griswold Fire Department's location at this intersection may impact emergency response during critical situations.

Town officials have also expressed concern with increased thru-traffic in Griswold. 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 the town.

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 Griswold 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 developments 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 date 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 Griswold. 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 the independent utilities requires continued coordination to assure the critical communications link between the town operations and the utilities are effectively maintained. A need for improved and continued coordination has been identified by the Hazard Mitigation Committee.

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

The Griswold Fire Department on Voluntown Road (Route 138) is in a potential flood zone, which may impact response time to emergencies during severe storms. Hazard mitigation measures that can address the potential flooding of the Griswold Fire Department include critical facilities protection, relocation, building elevation, and flood proofing.

During fire emergencies there is a mutual aid agreement with several towns surrounding Griswold, which include Ledyard, Voluntown, and Preston. This agreement allows the surrounding towns to use low band radio frequencies for town to town communication.

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 & 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 of 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 need for a continued and expanded program of public information has been identified by the Hazard Mitigation Committee. Such a program could include providing educational information to the home owners 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 Griswold.

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 potential hazard mitigation projects recommended to reduce Griswold's vulnerability to natural hazards. A matrix depicting potential hazard mitigation projects and a prioritized ranking are 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 Griswold Hazard Mitigation Projects

Hazard	Vulnerable Location	Mitigation Project	Priority
Flooding	Fire Department on Route 138 at the Intersection of 138 and Old Bethel Road	Relocation of Fire Department Containing Emergency Operation Center and Shelter or Improve Hydraulics of Bridge at Pachaug River	High
All Hazards	Town Wide	Enhance Emergency Power Generation Capability at Critical Facilities	High
All Hazards	Town Wide	Evaluate Feasibility of Intercommunity Emergency Response and Sheltering at Griswold High School	High
All Hazards	Town Wide	Evaluate the Hazard Resistant Nature of All Critical Facilities	High

The Town of Griswold 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
Flooding	Arbor Road (Near Quinebaug River)	Evaluate Structural Project and Property Acquisition	Medium
All Hazards	Town Wide	Review of Town Transportation Facilities to Identify Critical Risks	Medium

The Town of Griswold Hazard Mitigation Projects

Hazardous Materials Spills on Roadways	State Roads	Identify Appropriate Improvements to Traffic Infrastructure and Emergency Response Training and Equipment	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
Hazard	Vulnerable Location	Mitigation Project	Priority
All Hazards	Town Wide	Evaluate Emergency Shelters, Update Supplies and Check Communication Equipment	Low

The Town of Griswold Hazard Mitigation Projects

All Hazards	Town Wide	Maintain Emergency Personnel Training as well as Maintaining and Updating Emergency Equipment and Response Protocols	Low
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 Griswold Hazard Mitigation Projects

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

