



**Town of Mansfield  
Agenda Item Summary**

**To:** Town Council  
**From:** Matt Hart, Town Manager *MWH*  
**CC:** Maria Capriola, Assistant Town Manager; Fran Raiola, Deputy Chief/Director of Emergency Management; David Dagon, Fire Chief  
**Date:** November 12, 2013  
**Re:** Natural Hazards Mitigation Plan

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**Subject Matter / Background**

The Windham Region Council of Governments (WINCOG) has developed a multi-jurisdictional Natural Hazards Mitigation Plan for its member towns. In order to apply for state and federal emergency management grants and disaster reimbursement, municipalities need to adopt a Natural Hazards Mitigation Plan and conduct emergency management planning.

WINCOG is required to review and update the Plan on a regular basis. This year, the review schedule calls a public hearing to seek input regarding the Mansfield portion of the draft Plan.

**Recommendation**

Staff recommends that the Town Council schedule a public hearing to solicit public comment regarding the Mansfield portion of the draft Natural Hazards Mitigation Plan.

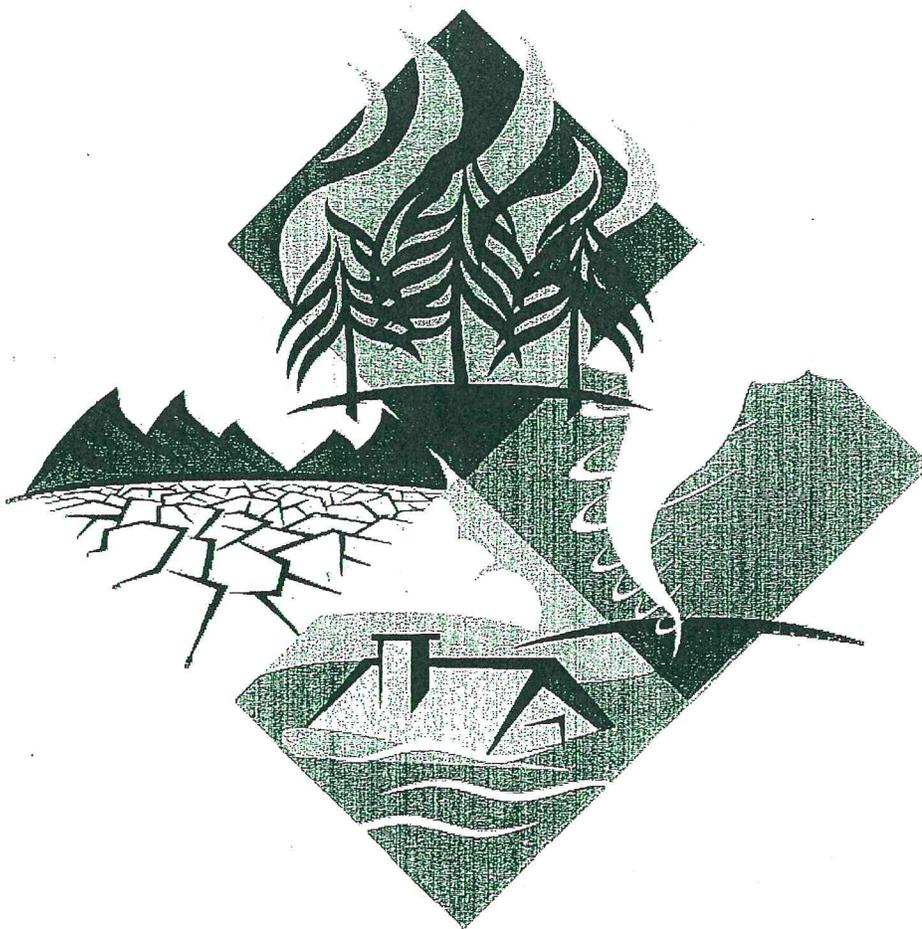
If the Town Council supports this recommendation, the following motion is in order:

*Move, effective November 12, 2013, to schedule a public hearing for 7:30 PM at the Town Council's regular meeting on November 25, 2013, to solicit public comment regarding the Mansfield portion of the draft Natural Hazards Mitigation Plan.*

**Attachments**

- 1) Natural Hazards Mitigation Plan (Mansfield section)

# Natural Hazards Mitigation Plan



A Multi-jurisdictional Plan for the Towns of  
Chaplin, Columbia, Coventry, Hampton,  
Lebanon, Mansfield, Scotland, Willington, and Windham

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Prepared by the Windham Region Council of Governments

May 2013 – DRAFT

Approved by FEMA date

## Windham Region Council of Governments

### Council Members

#### **Town of Chaplin**

William H. Rose IV, First Selectman

#### **Town of Columbia**

Carmen Vance, First Selectman  
Jonathan Luiz, Town Administrator (Alt.)

#### **Town of Coventry**

Elizabeth Woolf, Council Chairman  
John Elsesser, Town Manager (Alt.)

#### **Town of Hampton**

Allan Cahill, First Selectman

#### **Town of Lebanon**

Joyce Okonuk, First Selectman

#### **Town of Mansfield**

Elizabeth Paterson, Mayor  
Matthew W. Hart, Town Manager (Alt.)

#### **Town of Scotland**

Daniel D. Syme, First Selectman

#### **Town of Willington**

Christina Mailhos, First Selectman

#### **Town of Windham**

Ernest Eldridge, Mayor  
Neal Beets, Town Manager (Alt.)

### Staff

Mark Paquette, Executive Director  
Jana Butts, AICP, Senior Planner/GIS Coordinator  
Dagmar Noll, Planner  
Michael Cipriano, GIS Analyst

## **Mansfield Mitigation:**

### Scope/Overview

The Risk and Vulnerability Assessment portion of this plan looked at the historical and potential impacts of the following hazards throughout the region: dam failures, droughts, earthquakes, floods, hurricanes, ice jams, severe winter weather, thunderstorms, tornadoes and wind damage, and wildfires. A review of the historical occurrences of each hazard provided valuable information used in assessing potential future risk. A review of each community's resources provided the basis for an analysis of the community's vulnerability to each hazard – the extent to which the community might suffer loss of human life, injuries, and/or property damage.

With an understanding of its risk and vulnerability to natural disasters, the community can take steps prior to such an event to reduce its impacts (loss of property and life). The Connecticut Department of Energy and Environmental Protection (DEEP) has provided guidance in the form of a comprehensive list of possible mitigation measures for each hazard (see Appendix III). In the context of the community's risk and vulnerability assessment, only some of these measures will be cost-effective. The purpose of the Natural Hazard Mitigation Plan (NHMP) is to identify reasonable and appropriate mitigation measures for each hazard.

Certain mitigation practices are beneficial for any disaster, and the following measures are recommended for all communities:

- Encourage all buildings to be improved to meet current building codes. Changes in building codes apply only to new constructions and renovations.
- Educate the public about disaster preparedness and the benefits of mitigation measures. Increasing the public's awareness of possible consequences of natural disasters and how they might better prepare to safeguard their lives and property is an important part of every community's mitigation plan.

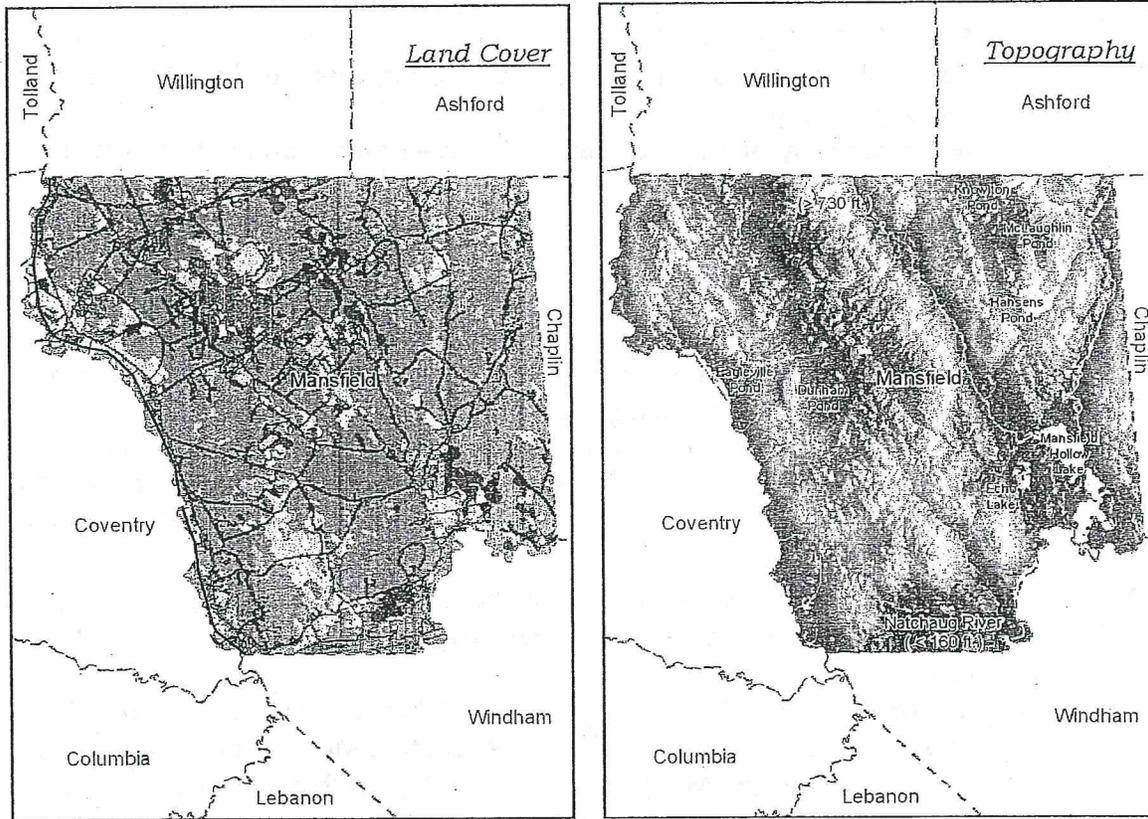
### General Town Description

Mansfield is located in Tolland County in eastern Connecticut and lies in the center of the WINCOG Region. Mansfield has a total area of 45.7 square miles (29,227 acres) and is bounded on the east by Chaplin, on the south by Windham, on the north by Ashford and Willington, and on the west by Coventry. The 2010 Census population count was 26,543 persons, a 28.1% increase from 2000 (20,720). Mansfield is mostly rural with some agriculture. Fourteen percent of Mansfield is developed (See Figure 30).

Urban densities of population are found in the village of Storrs (home of the main campus of the University of Connecticut) and in southern Mansfield.

# Town of Mansfield Overview

Figure 30



## Mansfield Land Cover Breakdown

**QUICK TOWN STATS:**

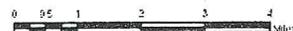
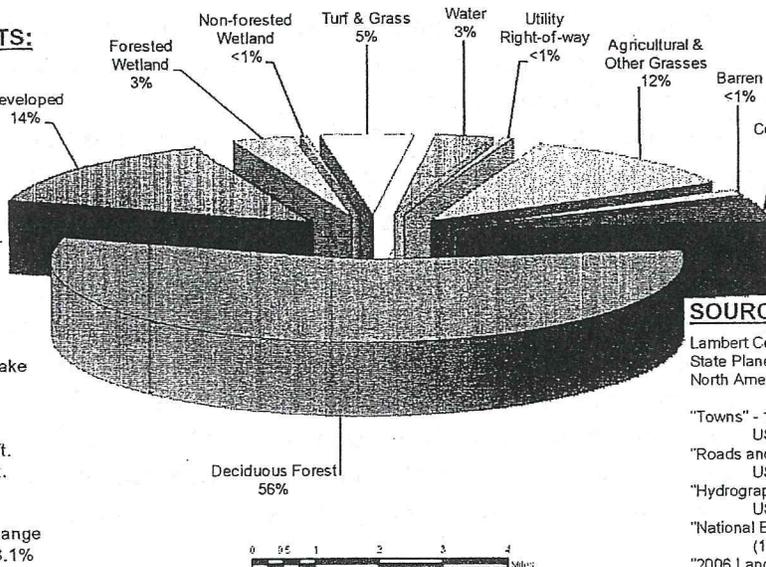
Town Area -  
 45.7 sq. miles  
 (29,174 acres)

Water body area -  
 856 acres

Water bodies > 10 acres -  
 Dunham Pond  
 Eagleville Pond  
 Echo Lake  
 Hansens Pond  
 Knowlton Pond  
 Mansfield Hollow Lake  
 McLaughlin Pond

Elevation -  
 Maximum = > 730 ft.  
 Minimum = < 160 ft.

Population -	2000	2010	Change
	20,720	26,543	28.1%



Scale: 1:180,000

**SOURCE DATA:**

Lambert Conformal Conic,  
 State Plane Coordinate System  
 North American Datum of 1983 (NAD83)

"Towns" - 1:24,000, 1969-1984,  
 USGS/CT DEP.

"Roads and Trails" - 1:24,000, 1969-1984,  
 USGS/CT DEP.

"Hydrography" - 1:24,000, 1969-1984,  
 USGS/CT DEP.

"National Elevation Dataset" - 30 meter  
 (1 arc second).

"2006 Land Cover Greater Connecticut" -  
 100 ft sq., 2006, UConn. CLEAR.

Critical Facilities in Mansfield include: (See Figure 31)

- two fire departments: one is the Mansfield Fire Department, a combination department with three station locations (Route 32 at the junction of S. Eagleville Road, Route 195 north of Route 44 and one department on Route 195; and the second is a full-time department, separate from the town, on the University of Connecticut's campus;
- one private psychiatric and substance abuse hospital off Route 195 near the town of Windham border;
- one resident trooper's office near the intersection of Route 195 and South Eagleville Road;
- one police department on the University of Connecticut's Campus;
- eight primary and secondary level schools: two Montessori schools, three elementary schools, one middle school, one high school, and one school associated with the Natchaug Hospital;
- six historic districts: the Spring Hill Historic District, the Mansfield Centre Historic District, the Mansfield Hollow Historic District, the Gurleyville Historic District, the UConn Historic District, the Mansfield Training School Historic District;
- a number of historic buildings throughout town, including the old town hall off Route 195 in the center of town and several buildings on the UConn Campus;
- the University of Connecticut, a cultural beacon that attracts people to university sporting events, the Connecticut State Museum of Natural History, the William Benton Museum of Art, the Ballard Institute and Museum of Puppetry, and a number of other cultural centers;
- two elderly concentrations: one off South Eagleville Road, which includes the Mansfield Center for Nursing and Rehabilitation, the Juniper Hill elderly housing, and the Wright's Way elderly housing, and a second one off Route 44 at Jenson's Residential Community;
- three shopping areas including: Storrs Center mixed use housing/commercial area, the Eastbrook Mall near the town of Windham border, and the Four Corners shopping area at the intersection with Route 195 and Route 44;
- one telephone facility;
- two well fields and associated water treatment facilities: the UConn Willimantic River well field off Route 32 in the northern section of town and the UConn Fenton River well field located north of the Gurleyville Village, and the UConn water storage facility located on Horse Barn Hill (the latter two facilities primarily serve the University of Connecticut Campus and commercial and governmental facilities that are adjacent to the campus);
- one wastewater treatment plant owned by UConn and located on the campus;
- Holiday Hill camp;

- a reservoir and water treatment facility owned by Windham and located in the southeastern section of town, which primarily serves the Town of Windham and the southern section of Mansfield;
- four major manufactured home parks: Jenson's Residential Community off Route 44, Valleyview off Route 32, Chaffeeville Road Park off Route 195, and Burcamp off Route 32, as well as a number of manufactured homes dispersed throughout town;
- several apartment buildings, fourteen of which house large populations; and
- six high potential loss dams.

The largest individual population concentration in town, the University of Connecticut's Storrs campus, had 16,829 undergraduates and 3,907 graduate students enrolled in the 2011 school year. UConn's housing facilities allow the campus to accommodate over 12,000 students while the university is in session. The seasonal increase in population in this area creates an elevated concern. It should be noted that the University's Police and Fire protection capabilities are comparable to that of a municipality, but given a disaster of a large enough scale, the University would require further assistance beyond that which they can provide for themselves.

Other areas of concern in Mansfield include one home on Laurel Lane, which during times of high water levels becomes stranded; seven homes on Thornbush Road, which during times of high water become inundated, (this happens approximately once every five years to one out of seven of these structures); and an area of Bassett Bridge Road which is closed during times of high water. This latter area is a flood control area and is designed for this purpose, however, traffic is disrupted during these times. The last area of concern in the town is the railroad which runs along the western town line. This railroad is not only an economic concern, but, given the cargo, at times this rail can be a hazardous material concern.

Largely forested, Mansfield is made up of approximately 56% deciduous forest, 5% coniferous forest and 3% forested wetlands. Other land cover in the town includes: developed (14%), agricultural and other grasses (12%), water (3%), turf and grass (5%), barren land (<1%), utility rights-of-way (<1%) and non-forested wetlands (<1%). The approximate 786 acres of the town occupied by water bodies includes: Dunham Pond, Eagleville Pond, Echo Lake, Hansens Pond, Knowlton Pond, Mansfield Hollow Lake and McLaughlin Pond. Mansfield's elevation ranges from about 160 feet in the southeast corner of town at the Natchaug River to about 730 feet in the north/northwest section. In addition to all the natural hazards described previously in this plan on a regional level, Mansfield is also at risk of damage caused by flooding and dam failures.

## Evaluation of Risks & Vulnerability

### Dam Failure

#### *Risks & Vulnerability:*

Dam failure risk and vulnerability is discussed on a regional level on page 17, section II.B.

#### *Risk*

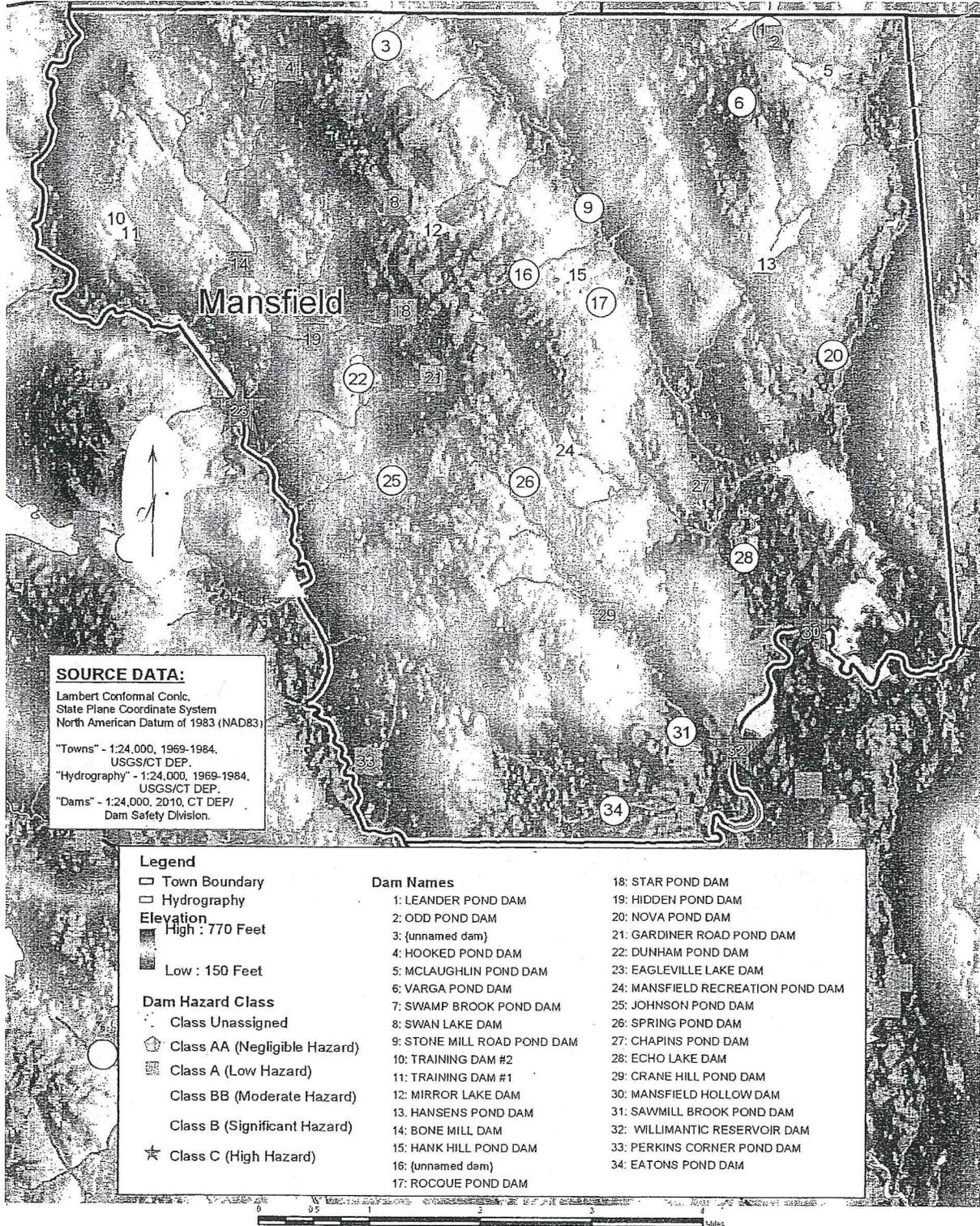
There are thirty-four dams in Mansfield ranging from Hazard Class A (low hazard) to Hazard Class C (high hazard). Eleven dams in the town are classified as low hazard (Class A); failure of any of these dams would hardly be of concern. Three dams are classified as moderate hazard (Class BB) and their failure would cause some damage, but no major disruptions. The failure of any of the four dams classified as significant hazard (Class B), or the three high hazard (Class C) dams could cause serious damage. The failure of the significant hazard (Class B) dams could cause severe damage and is of great concern in the town; however the greatest concern would be the failure of the high hazard dams in the town, Eagleville Lake Dam, Mansfield Hollow Dam or Willimantic Reservoir Dam. There are also thirteen unassigned dams in the town, but the fact that close watch is kept over significant and high hazard dams suggests that these structures are either a moderate, low, or negligible hazards.

#### *Vulnerability*

The failure of any Class B or Class C dam brings with it damages, economic loss and the potential for loss of life. One of three Class C dams is located on the south end of the Eagleville Pond, another is located on a section of the Mansfield Hollow Lake and the last is located on the south end of the Willimantic Reservoir. Their high hazard classification means that in the event of their failure, besides the definite loss of property and economic losses, the loss of life is probable. Figure 32 shows the placement of all thirty-four dams in the town.

# Town of Mansfield Dams

Figure 32



### *Mitigation Efforts*

Current state mitigation measures are described on a regional level on page 17, section II.B of the Natural Hazards Mitigation Plan. Among these mitigation measures are periodic dam inspections. Periodic inspections help to determine if dams are structurally sound. If a dam's structural integrity is questioned, recommendations made to ensure the safety of the structure may include:

- any emergency measures or actions, if required to assure the immediate safety of the structure;
- remedial measures and actions related to design, construction, operation, maintenance and inspection of the structure; additional detailed studies, investigations and analyses; or
- recommendations for routine maintenance and inspection by the owner.

Out of the 164 dams in the WINCOG Region 112 are privately owned, of which 19 are in Mansfield. Private owners of dams are generally reluctant to make repairs, which tend to be costly. In these instances, needed repairs may not be done in a timely manner.

Whether it is a structurally sound dam or a weak dam, Emergency Operation Plans (EOPs)/Emergency Action Plans (EAPs) are very important mitigation measures. There are currently no statutory mandates for EOPs. However, the DEEP works with owners of dams at greatest risk to make certain EOPs are in place and up-to-date. Hurricanes, flooding, ice jams and tornadoes may breach even a well-built dam, given a destructive enough event. Having a plan that lays out how to respond to a disaster, prior to the disaster occurring, is a very important tool in reducing loss of property and life. Mitigation measures for flooding (see below), which is a risk commonly associated with a dam failure, should also be encouraged.

While the state assumes responsibility for inspecting dams and recommending measures to lessen the risk of dam failure, the municipality can take the following mitigation actions:

- for municipally-owned dams, make sure that EOPs are in place and current, and implement recommendations resulting from state inspections; and
- for privately-owned dams, encourage each dam owner to have an EOP in place and current, and implement recommendations resulting from state inspections; monitor compliance.

## Drought

### *Risk & Vulnerability:*

Drought risk and vulnerability is discussed on pages 17-18, section II.B.

### *Mitigation Efforts*

As with any rural community that depends on aquifers and local well systems, Mansfield's vulnerability to drought increases with population growth and the accompanying increased demands for water. Good land use planning and helping the community to understand the importance of water conservation can reduce the threat of drought.

The State's Automated Flood Warning System and the "Connecticut Drought Preparedness and Response Plan" (see page 18) are statewide mitigation efforts already in place. Other specific measures that should be considered include:

- completing a town-wide groundwater study, including recharge into existing aquifers to develop recommendations for future land use patterns;
- implementing site design techniques and criteria such as strict regulation of vegetative buffers for stream and river corridors, rain gardens for site drainage, and prohibition of wetlands alteration;
- studying effectiveness of conservation measures; and
- implementing water conservation awareness programs.

## Earthquake

### *Risk & Vulnerability:*

Earthquake risk and vulnerability is discussed on pages 18-22, section II.B.

### *Mitigation Efforts*

Occurrences of large earthquakes in the region are infrequent. While many mitigation measures may not be cost-effective, the community should consider the following:

- enforcing effective building codes and local ordinances;
- encouraging emergency facilities such as hospitals to be constructed to withstand seismic events; and
- encouraging a low-cost earthquake rider for homeowners and businesses.

## Flooding

### *Risks*

The Town of Mansfield is at risk of flooding because of a number of streams, brooks and ponds in the town. According to the 1980 Federal Emergency Management Agency's (FEMA's) updated Flood Insurance Study (FIS) for the town:

"Floods in Mansfield have occurred in every season of the year. Spring floods are common and are caused by rainfall in combination with snowmelt. Floods in late summer and fall are usually the result of hurricanes or other storms moving northeastward along the Atlantic coast. Winter floods result from occasional thaws, particularly in years of heavy snowfall.

Major floods of the past 50 years occurred in Mansfield in March 1936, September 1938, and August 1955. The 1936 and 1938 floods are equivalent to a 20-year frequency flood and a 100-year frequency flood, respectively. Of these, the hurricane-caused flood of August 1955 was by far the most severe in terms of amount of runoff and property damage. The Willimantic River at the U.S. Geological Survey (USGS) gaging station (no. t01119500, with 40 years of operation) located just upstream of Route 31, recorded a peak discharge of 24,200 cubic feet per second (cfs) on August 19, 1955. This is equivalent to a flood having a recurrence interval of more than 200 years. The Natchaug River valley was spared serious flooding in 1955 because of the tremendous storage capacity in Mansfield Hollow Lake, which rose to within 8 feet of its spillway elevation (4)."

### *Vulnerability*

Areas studied for vulnerability, as noted in FEMA's 1980 FIS for the town, are as follows:

"The areas studied by detailed methods were selected with priority given to all known flood hazard areas, and areas of projected development or proposed construction until 1980.

Approximate methods of analysis were used to study those areas having low development potential and/or minimal flood hazards as identified at the initiation of the study. The scope and methods of study were proposed to and agreed upon by the Federal Insurance Administration and the community.

The streams studied in detail were the Natchaug River from the downstream corporate limit to Hollow Dam; the Willimantic River from the downstream corporate limits, the limit of flooding affecting the community (a point about 6,350 feet downstream from Cider Mill Road) to the upstream corporate limits; Mount Hope River from its mouth to the upstream corporate lime; and Conantville Brook from its downstream corporate limit to Pleasant Valley Road. Streams studied by approximate

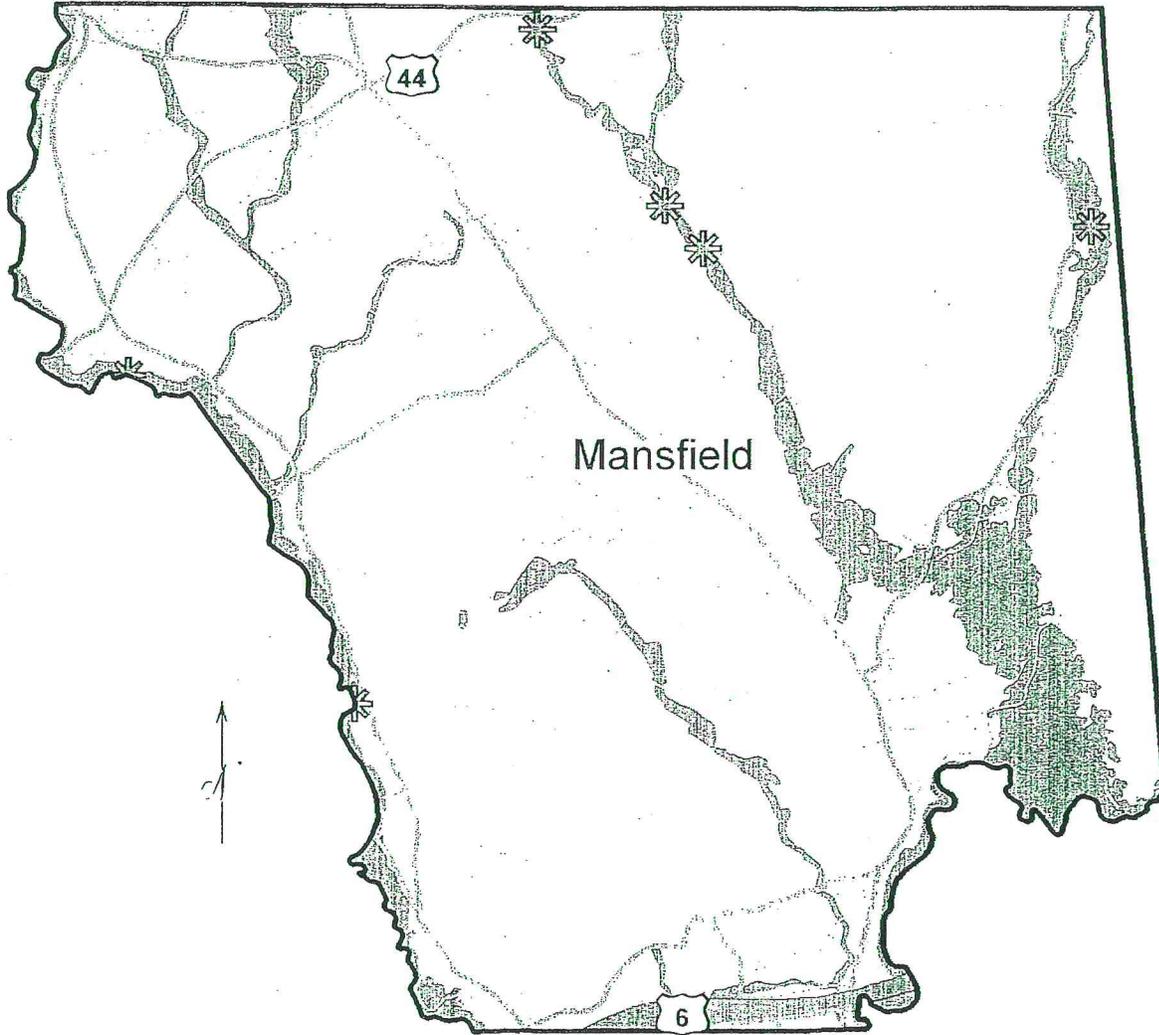
methods were the Fenton River, Fishers Brook, Eagleville Brook, Cedar Swamp Brook, Nelson Brook and Sawmill Brook (2)."

A map of the flood risk areas is provided on Figure 33.

In addition to these areas noted by the FIS, Mansfield also has four "scour bridges". This is a term used by ConnDOT to describe a bridge whose structure may be undermined by soil erosion during certain rainfall or stream flow events, thus affecting its stability and safety. The structures located on Old Turnpike Road, Stonemill Road and Gurleyville Road all cross the Fenton River, while the structure located on Laurel Lane crosses the Mount Hope River.

# Flood Risk Zones of Mansfield

Figure 33



**Legend**

-  Scour Bridges
-  Major Highways
-  Highways
-  Local Roads
-  100 Year Flood Zone
-  500 Year Flood Zone

**SOURCE DATA:**

Lambert Conformal Conic,  
 State Plane Coordinate System  
 North American Datum of 1983 (NAD83)

"Towns" - 1:24,000, 1969-1984, USGS/CT DEP.  
 "Roads and Trails" - 1:24,000, 1969-1984, USGS/CT DEP.  
 "FEMA Flood Insurance Rate Maps (FIRM)" - scale varies, collection date varies, FEMA.  
 "Dynamap Transportation v11.3 streets" - Scale varies, 2009, Tele Atlas North America Inc.  
 "Scour Critical Town Bridges" - Conndot Bridge Safety + Evaluation, 10/10/2012.



Scale: 1:84,000

January 2012

Prepared for: The Windham Region Council of Governments Hazard Mitigation Plan.

FOR ADVISORY PURPOSES ONLY

### *Mitigation Efforts*

The Town of Mansfield's current zoning regulations include, but are not limited to, the following limitations in the flood zone<sup>y</sup>:

- No structures to be used for residential occupancy are allowed within designated Flood Hazard Areas. The lowest floor elevation, including basement, of all non-residential structures located within designated flood hazard areas shall be elevated to at least one (1) foot above the base flood level (100-year flood level) or be flood proofed with structural certification by a registered professional engineer or architect certifying that the building will withstand a flood equivalent to the 100-year storm without damage (Article 10.E.4.a).
- In all Flood Hazard Areas and areas subject to a base flood, any new construction or any substantial improvements shall be: anchored to prevent flotation, collapse or lateral movement of the structure; constructed with materials resistant to flood damage; and constructed by methods and practices that minimize flood damage (Article 10.E.4.b.1-3).
- All existing manufactured homes to be replaced or to be substantially improved shall be elevated so that the lowest floor is at least one (1) foot above the base flood elevation. It shall be placed on a permanent foundation which itself is securely anchored and to which the structure is securely anchored so that it will resist flotation, lateral movement, and hydrostatic and hydrodynamic pressures. Anchoring may include, but not be limited to, the use of over-the-top or frame ties to ground anchors (Article 10.E.4.c).
- Within designated floodways, including zone A as designated in the flood Insurance Rate Map, all development is prohibited, unless it has been demonstrated through hydrologic and hydraulic analyses performed in accordance with standard engineering practice that the proposed development would not result in any increase in flood levels within the community during the occurrence of the base flood discharge (Article 10.E.4.f).

Mansfield prohibits residential structures from being constructed within designated flood hazard areas. All non-residential proposed structures must meet elevation requirements and strict construction demands. Proposed structures may be required to be constructed with certain materials, elevated, flood proofed or anchored. Manufactured (mobile) homes are required to meet further elevation, anchoring and tie down requirements. It must be shown that any proposed development in the 100-year flood plain will not alter the flood levels in the

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<sup>y</sup> The flood zone being the Flood Hazard Areas, designated as land within flood encroachment lines administered by the State Department of Environmental Protection, and other land subject to 100-year flooding.

community. These types of regulations help to keep structures out of areas at risk of flooding. Structures that are allowed in the flood plain must meet requirements put in place to greatly reduce the risk of damage to property and the loss of life, should a flood occur.

Additional mitigation measures recommended for all towns in the region include:

- educating the public on
  - risks of flooding,
  - risks of building in hazard-prone areas,
  - Federal Emergency Management Agency (FEMA) floodplain maps (and making these maps easily available to the public);
- implementing a maintenance program to clear debris from storm water drainage areas;
- developing sediment control to prevent clogged drainage systems, such as street sweeping, curb and gutter cleaning, paving dirt roads, and planting vegetation on bare ground;
- investigating the use of flood-prone areas as open spaces;
- encouraging individuals in flood-prone areas to purchase flood insurance;
- elevating structures above the 100-year flood level; and
- considering the conservation of open space by acquisition of repetitive loss structures.

#### Stormwater

Stormwater runoff can significantly exacerbate flooding; therefore, managing stormwater runoff is a priority mitigation measure. Residential and commercial development increases impervious land area, reduces the infiltration of stormwater runoff into the ground, and increases the volume and velocity of stormwater runoff causing flooding. Enforcing appropriate maintenance programs for stormwater facilities will therefore help reduce the impact of these events and subsequently reduce the damage caused by flooding. A good stormwater management system promotes groundwater recharge and controls peak flows, while reducing local flooding and maintaining stream bank integrity. An example of a good stormwater management system would be one that calls for removing sediment accumulation from catch basins yearly. This may make the difference in whether or not flooding occurs. Mansfield is encouraged to develop a municipal stormwater management plan. All towns within the region are also encouraged to consider the effects of proposed future development on stormwater runoff.

### Hurricanes

#### *Risk & Vulnerability:*

Hurricane risk and vulnerability is discussed on pages 23-27, section II.B.

#### *Mitigation Efforts*

Some of the greatest damage from hurricanes is caused by flooding, high winds and tornadoes. Mitigation measures for these events are looked at separately in the flooding and tornado/wind damage sections. Other mitigation efforts that should be considered include:

- providing emergency shelters;
- implementing a tree hazard management program, which would encourage responsible planting practices and minimize future storm damage to buildings, utilities, and streets;
- practicing a tree trimming maintenance program; and
- relandscaping with native species.

### Ice Jams

#### *Risk & Vulnerability:*

Ice jam risk and vulnerability is discussed on page 28, section II.B.

#### *Mitigation Efforts*

During ice jams the biggest concern is the risk of flooding. See mitigation measures under flooding (above).

### Severe Winter Storms

#### *Risk & Vulnerability:*

Severe winter storm risk and vulnerability is discussed on pages 29-30, section II.B. Key risks are the relative isolation of the rural communities from emergency services; loss of electrical power to large areas from ice accumulation or high winds, and fire from improper use of alternative heating sources, candles and gas stoves. The leading cause of death is from automobile and other transportation accidents. Property damage can also occur from frozen water pipes and falling trees or branches from ice accumulation and/or wind.

*Mitigation Efforts (see also flooding and tornado/wind damage)*

Some of the greatest damage from winter storms is caused by flooding and high winds, and mitigation measures for such hazards are discussed under those headings.

It is particularly important to encourage people to stay indoors and out of harm's way when severe winter weather threatens. Such conditions increase the frequency of traffic accidents and emergency responders take longer to reach accident scenes because of vehicles unnecessarily on the roads.

Power outages can cause a number of problems, from loss of heat and the risk of frozen pipes to fire hazards. Tree-trimming programs can lessen the risk of power outages to some extent. Putting utility wires underground can lessen the risk even further. In any event, the municipality should develop a plan to restore power as quickly as possible.

The National Weather Service's Early Warning System is an important mitigation measure for winter storms. Other hazard-specific mitigation efforts that should be considered include:

- educating the public on
  - the risks of hypothermia,
  - the risks of carbon monoxide poisoning in motor vehicles and from portable heaters and power generators in homes,
  - the risk of fires from portable heaters and candles,
  - the importance of staying off the roads,
  - landscaping practices that encourage the planting of species that are less susceptible to damage from ice storms to reduce the risk of damage to structures;
- implementing a tree trimming maintenance program;
- encouraging underground utility wires; and
- providing emergency shelters before, during, and after the event.

### Thunderstorms

#### *Risk & Vulnerability:*

Thunderstorm risk and vulnerability is discussed on pages 30-31, section II.B.

#### *Mitigation Efforts (see also wildfires, flooding and tornado/wind damage)*

Some of the greatest damage from thunderstorms is caused by fires, flooding, high winds, and (on occasion) tornadoes. Mitigation measures for such hazards are discussed under those headings.

The National Weather Service's Early Warning System is an important mitigation measure for thunderstorms. Other hazard-specific mitigation efforts that should be considered include:

- educating the public on how to minimize risk of injury both indoors and outdoors (more specific);
  - when to turn off gas, electricity, and water; and
  - when and how to avoid contact with water and metal.
- clearing dead or rotting tree branches;
- securing outdoor objects that could become projectiles; and
- installing lightning rods.

### Tornado/Wind Damage

#### *Risk & Vulnerability:*

Tornado/Wind Damage risk and vulnerability is discussed on pages 31-34, section II.B.

#### *Mitigation Efforts*

While the region has a very low risk of experiencing a tornado with great destructive potential, basic measures to minimize damage from high winds can be implemented and public education efforts can help to prepare residents. Owners of older mobile homes should be particularly aware of mitigation measures that could protect their homes from damage.

The National Weather Service's Early Warning System is an important mitigation measure for tornado/wind damage events. Other hazard-specific mitigation efforts that should be considered include:

- being aware of, and educating the public through pamphlets and web-based information on
  - the warning signs for a tornado,
  - the importance of securing outdoor objects that could become projectiles,
  - what kinds of buildings are most vulnerable to damage from tornadoes or high winds (such as manufacture housing),
  - structural alterations to protect against wind damage,
  - when and where to seek shelter;
- encouraging upgrading of existing buildings to meet current building codes;
- enforcing and updating building code standards for light frame construction, especially wind resistant roofs. FEMA articles on bracing for gable trussed roofs and bracing for doors and windows are available

- for review. Information is also available on placement of HVAC systems and electrical utilities to resist both wind and flood damage; and
- encouraging underground utility wires.

### Wildfire Hazards

#### *Risk & Vulnerability:*

Wildfire Hazard risk and vulnerability is discussed on pages 35-36, section II.B.

#### *Mitigation Efforts*

Long periods of drought are one of the primary natural causes of wildfires. Mitigation measures for drought are discussed under that heading.

The State's Automated Flood Warning System (which monitors precipitation levels to determine both flood and drought potential) is a mitigation measure already in place. Other mitigation efforts that should be considered include:

- educating the public on safe fire practices;
- using fire-resistant material when renovating, building, and retrofitting structures;
- moving shrubs and other landscaping away from structures;
- periodically clearing brush and dead grass from property; and
- acquiring land susceptible to wildfires to maintain it as open space.

### Mitigation Strategies

The Town of Mansfield has reviewed the "Risk and Vulnerability Assessment," the strengths and weaknesses of its existing mitigation strategies, and developed proposed mitigation strategies. Based upon internal resources, discussions and meetings with local officials and the general public, this section presents goals, objectives and proposed mitigation strategies. These mitigation strategies guide future efforts to reduce the loss of life and property as a result of natural disasters and attempt to break the expensive cycle of repeated damage and reconstruction. The proposed mitigation strategies are further prioritized to help guide the implementation schedule.

Mansfield gave a "High" priority rating to thirteen mitigation projects as listed on the following page. These projects mitigate the most significant natural hazards that affect the town or multiple natural hazards, are considered feasible, would be effective in avoiding or reducing future losses, seem reasonable for the size of the problem and likely benefits, have political and public support, and improve upon existing programs or support other municipal priorities. All other supporting tasks were assigned a "Medium" or "Low" priority

rating based on the same criteria. Based on an internal review by the town the following costs for various projects were determined:

- Purchase or rehabilitate Vac-all equipment for silt removal - \$60,000.
- Study catch basin silt capacity to determine quickest filling catch basins to upgrade - \$5,000 to \$15,000 (bid contract).
- Upgrade all eight of the town's front-line plows with liquid spreaders (including brine maker) - \$65,000.
- Budget appropriate money necessary to maintain and remove dead, dying, dangerous or diseased trees from the town rights-of-ways - \$35,000.
- Increase the amount of preventative tree maintenance - \$50,000 (\$10,000 per year for 5 years).
- Improve and expand the town's GIS application to assist town personnel in the event of an emergency of natural disaster (including planimetrics & work stations):
  - Planimetrics –
    - Roads - \$5,000.
    - Buildings - \$115,000.
    - Additional fire ponds and minor water ways - \$10,000.
  - GIS work stations –
    - Fire Marshall, Fire Admin, Garage, Town Manager and CD Ops Center (5 machines) - \$15,000.
  - GIS training for personnel getting new workstations -
    - 5 persons – \$7,500.

**Goal:** To reduce the loss of life and property and economic consequences as a result of natural disasters.

**Objective 1:** To reduce the likelihood of flooding by improving existing natural and artificial drainage systems.

Task	Who	When	Priority
Study catch basin silt capacity to determine quickest filling catch basins to upgrade	Public Works	[update]	[use checklist]
Purchase or rehabilitate Vac-all equipment for silt removal.	Public Works	Completed	[use checklist]

**Objective 2:** To reduce the likelihood of flooding by bridge conditions.

Task	Who	When	Priority
Improve Bassett Bridge crossing the Naubesatuck Lake; this structure is in the flood plain and gets closed frequently in high water events.	Public Works, contracted out	[update]	[use checklist]
Study catch basin silt capacity to determine quickest filling catch basins to upgrade	Public Works	[update]	[use checklist]
Examine Hillyndale Road Bridge crossing the Eagleville Brook; this structure is eligible for funding under the Local Bridge Program FY '06 for structures under 20 feet.	Public Works, contracted out	[update]	[use checklist]
Examine Shady Lane Bridge crossing the Eagleville Brook; this structure is eligible for funding under the Local Bridge Program FY '06 for structures under 20 feet.	Public Works, contracted out	[update]	[use checklist]
Examine Old Turnpike Road Bridge crossing the Fenton River; this is a scour bridge and was rated as "fair" on ConnDOT's 2004 inspection report.	Public Works, contracted out	[update]	[use checklist]
Examine Gurleyville Road Bridge crossing the Fenton River; this is a scour bridge and was	Public Works, contracted out	[update]	[use checklist]

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rated as "fair" on ConnDOT's 2004 inspection report.			
Examine Depot Road Bridge crossing the Willimantic River, this structure is a scour bridge for 10-year river flow events and is eligible for funding under the Local Bridge Program FY'06 for structures over 20 feet.	Public Works, contracted out	[update]	[use checklist]
Examine Plains/Brigham Road Bridge crossing the Willimantic River, this structure is a scour bridge for 10-year river flow events and is eligible for funding under the Local Bridge Program FY'06 for structures over 20 feet.	Public Works, contracted out	[update]	[use checklist]
Examine Laurel Lane Bridge crossing the Mount Hope River; this is a scour bridge and was rated as "fair" on ConnDOT's 2004 inspection report. This structure is eligible for funding under the Local Bridge Program FY'06 for structures over 20 feet.	Public Works, contracted out	Completed [date]	[use checklist]
Construct new Stone Mill Road #1 Bridge crossing the Fenton River; this is a scour bridge and was rated as "fair" on ConnDOT's 2004 inspection report. This structure is eligible for funding under the Local Bridge Program FY '06 for structures under 20 feet.	Public Works, contracted out	Completed [date]	[use checklist]

**Objective 3:** To reduce the likelihood of flooding, evaluate property prone to flooding.

Task	Who	When	Priority
Home on Laurel Lane is isolated during flooding events. (Acquire property?)	Emergency managers	[update]	[use checklist]
Six homes on Thornbush Road are in the flood zone and at times become inundated during high water events	Emergency Managers	[update]	[use checklist]

**Objective 4:** Reduce costs associated with providing emergency services and other public services in the event of a natural disaster.

Task	Who	When	Priority
Upgrade all 8 of the town's front-line plows with liquid spreaders (including brine maker).	Public Works	[update]	[use checklist]

**Objective 5:** Reduce the amount of debris from severe storms through preventative tree maintenance.

Task	Who	When	Priority
Budget appropriate money necessary to maintain and remove dead, dying, dangerous or diseased trees from the town rights-of-ways.	Public Works	[update]	[use checklist]
Increase the amount of preventative tree maintenance.	Public Works	[update]	[use checklist]

**Objective 6:** Expand activities related to emergency preparedness and improve natural hazard response capabilities

Task	Who	When	Priority
Implement a reverse 911 or similar system to alert residents of natural phenomenon and if necessary, evacuation procedures.	Emergency Management Director	2014	High
Obtain additional cots and bedding to adequately serve the emergency shelters in the event of an emergency or natural disaster.	Emergency Management Director	2014	Med
Ensure that the emergency shelters have adequate supplies to respond to natural emergencies.	Emergency Management Director	2014	Med
Acquire and install generators at critical local facilities	Emergency Management Director	[update]	[see checklist]
Develop a GIS application to assist town personnel in the event of an emergency of natural disaster (including planimetrics & work stations).	Public Works, Engineering, [??], Fire Dept.	2014-2018	High

**Objective 7:** Whenever practical, incorporate natural hazard mitigation strategies into existing town projects.

Task	Who	When	Priority
Use the Government Access Channel to inform the Mansfield public about how to prepare and respond to hazards and emergencies and to encourage residents to be prepared to help others in need.	Manager, Emergency Management Director	[update]	High
Educate public on preventative tree planting around power lines using CL&P pamphlets and generator safety including installation and use.	Emergency Management Director	2013-2014	High

**Objective 8:** To reduce the likelihood of wildfire hazards by improving water availability.

Task	Who	When	Priority
Identify places in need, throughout town, and add alternative water sources.	Fire Dept./Planning	2014-2018	Med

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