

The City of Springfield

Local Natural Hazards Mitigation Plan



Adopted by the Mayor of the City of Springfield on

Prepared by:

The Springfield Natural Hazards Mitigation Planning Committee

and

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1: INTRODUCTION

Hazard Mitigation

The Federal Emergency Management Agency (FEMA) and the Massachusetts Emergency Management Agency (MEMA) define Hazard Mitigation as any sustained action taken to reduce or eliminate long-term risk to people and property from natural hazards such as flooding, storms, high winds, hurricanes, wildfires, earthquakes, etc. Mitigation efforts undertaken by communities will help to minimize damages to buildings and infrastructure, such as water supplies, sewers, and utility transmission lines, as well as natural, cultural and historic resources.

Planning efforts, like the one undertaken by the City of Springfield and the Pioneer Valley Planning Commission, make mitigation a proactive process. Pre-disaster planning emphasizes actions that can be taken before a natural disaster occurs. Future property damage and loss of life can be reduced or prevented by a mitigation program that addresses the unique geography, demography, economy, and land use of a community within the context of each of the specific potential natural hazards that may threaten a community.

Preparing a local natural hazard mitigation plan before a disaster occurs can save the community money and facilitate post-disaster funding. Costly repairs or replacement of buildings and infrastructure, as well as the high cost of providing emergency services and rescue/recovery operations, can be avoided or significantly lessened if a community implements the mitigation measures detailed in the plan. FEMA requires that a community adopt a pre-disaster mitigation plan as a condition for mitigation funding. For example, the Hazard Mitigation Grant Program (HMGP), the Flood Mitigation Assistance Program (FMA), and the Pre-Disaster Mitigation Program are programs with this requirement.

Planning Process

The natural hazard mitigation planning process for the City of Springfield included the following tasks:

- Identifying the natural hazards that may impact the community.
- Conducting a Vulnerability/Risk Assessment to identify the infrastructure at the highest risk for being damaged by the identified natural hazards, particularly flooding.
- Identifying and assessing the policies, programs, and regulations a community is currently implementing to protect against future disaster damages.
- Identifying deficiencies in the current strategies and establishing goals for updating, revising or adopting new strategies.
- Adopting and implementing the final Local Natural Hazards Mitigation Plan.

The key product of this process is the development of an Action Plan with a Prioritized Implementation Schedule.

Public Committee Meetings

December 20, 2007, 9:00 am: Presentation to Springfield Local Emergency Planning Commission, held at Springfield City Offices.

December 18, 2009, 9:00 am: Working committee meeting held at Public Safety Building.

October 24, 2012, 1:00 pm: Working committee meeting held at the Springfield Office of Emergency Preparedness. The meeting was well attended by representatives attended from public safety (police, fire, emergency dispatch), public health, public works, finance, planning and the Mayor's Office. Agenda items included a discussion of the purpose of the working group, a review of hazard mitigation planning and the current draft plan, critical facilities and resources, as well as evacuation routes and an prioritization of action items. (Appendix D). Springfield posted its plan on its website and had hard copies available at the Mayor's Office for all residents, businesses and other concerned parties of Springfield and adjacent communities were encouraged to comment on the plan. The plans were made available in this manner for 21 days. Citizens from adjacent municipalities were also encouraged to comment on Springfield's plan. In addition to posting the draft plan on the city's website, it also complied with open-meeting laws and posted the meeting on the city's public calendar and posted a notice on the public bulletin board that provided the date, time, location, and agenda of the meeting.

November 7, 2012, 1:00 pm: Working committee meeting held at the Springfield Office of Emergency Preparedness. The meeting was well attended by representatives attended from public safety (police, fire, emergency dispatch), public health, public works, finance, planning and the Mayor's Office. Agenda items included a discussion of the public comments and any internal revisions to the draft plan, reaffirm the action plan of hazard mitigation strategies and review the required next steps to adopt and implement the plan. (Appendix D). The city complied with open-meeting laws and posted the meeting on the city's public calendar and posted a notice on the public bulletin board that provided the date, time, location, and agenda of the meeting.

Public Meetings

The City of Springfield agreed to collaborate with the Pioneer Valley Planning Commission (PVPC) to develop a local Hazard Mitigation plan and participate in the development of a regional Hazard Mitigation plan. In 2007 the PVPC began working with the City's Office of Emergency Preparedness to draft and execute the plan. Due to some internal delays, the plan was put on hold and was revisited in the spring of 2012.

Beginning in October 2012, the Office of Emergency Preparedness presented a draft Local Natural Hazard Mitigation Plan to the working committee of city officials (public safety, planning, public health and public works, legislative staff, etc.), as well as the

public. The meetings were advertised in the local newspaper and on the City's public website.

Public and Neighboring Jurisdiction Involvement in the Planning Process

From 2007-2009 the Pioneer Valley Planning Commission sent a series of press releases to all area media outlets to inform private citizens that the planning process for development of local Hazard Mitigation plans in the Pioneer Valley had commenced and that all residents of Springfield were invited to attend plan development sessions.

In addition to media outreach, all public meetings were posted at the Springfield City Hall (Appendix E) in compliance with the Commonwealth of Massachusetts' open meeting law.

In the initial stages of the process for developing this mitigation plan, the Pioneer Valley Planning Commission conducted a series of outreach efforts to make the public aware of the scope of the region's mitigation activities. In October of 2005, the Planning Commission notified all Select Boards and Chief Elected Officials that their community could participate in the region's mitigation planning process. Again, on April 4, 2006, the Planning Commission mailed a notice of planning activities to all Chief Elected Officials and Select Boards in the Pioneer Valley. Both mailings explained the purpose of mitigation planning and invited communities to participate in either Round I or Round II of the region's mitigation planning process.

In addition to media outreach, all public meetings were posted at City Hall in compliance with the Commonwealth of Massachusetts' open meeting law.

On June 13, 2012 the City of Springfield's Office of Emergency Preparedness sent a press release (see Appendix E) to all area media outlets to inform the public that a draft of Springfield's Hazard Mitigation Plan was under development and how one could become engaged in the process. The release also provided a very brief synopsis of the plan's purpose.

On October 17, 2012, Springfield posted its plan on its website and had hard copies available at the Mayor's Office for all residents, businesses and other concerned parties of Springfield and adjacent communities were encouraged to comment on the plan. The plans were made available in this manner for 21 days. Citizens from adjacent municipalities were also encouraged to comment on Springfield's plan.

Additionally, the Western Region Homeland Security Advisory Council (WRHSAC) and the Regional Emergency Planning Committees of western Massachusetts have been kept informed of the Hazard Mitigation planning process underway in western Massachusetts since 2005. The WRHSAC includes representatives of all emergency disciplines who are charged with bringing the information they learn at the meetings back to their colleagues. In this way, emergency response professionals, Fire Fighters, Police, Ambulance, municipal officials, dispatch, transit and EMS from all of western Massachusetts have been educated about hazard mitigation planning in the region

and have been specifically encouraged to review and comment on neighboring jurisdictions plans.

Plan Implementation & Monitoring

The implementation of the Springfield Local Natural Hazards Mitigation Plan will begin following its formal adoption by the Springfield Mayor and approval by MEMA and FEMA. Specific city departments and boards will be responsible for ensuring the development of policies, bylaw revisions, and programs as described in Sections 5 and 6 of this plan. The Springfield Natural Hazards Planning Committee will oversee the implementation of the plan.

The measure of success of the Springfield Local Natural Hazards Mitigation Plan will be the number of identified mitigation strategies implemented. In order for the city to become more disaster resilient and better equipped to respond to natural disasters, there must be a coordinated effort between elected officials, appointed bodies, city employees, regional and state agencies involved in disaster mitigation, and the general public.

The Springfield Natural Hazards Planning Committee will meet on an annual basis or as needed (i.e., following a natural disaster) to monitor the progress of implementation, evaluate the success or failure of implemented recommendations, and brainstorm for strategies to remove obstacles to implementation. Those parties noted in Section 6 of the plan, all of whom have a representative on the Springfield Natural Hazards Planning Committee, will be responsible for seeing that the actions are implemented and will report on their progress at the annual plan review meetings.

Outreach to the public, surrounding communities, agencies, businesses, academia, non-profits, or other interested parties outside of the City of Springfield will be done in advance of each annual meeting in order to solicit their participation in assessment of the plan. Following these discussions, it is anticipated that the committee may decide to reassign the roles and responsibilities for implementing mitigation strategies to different city departments and/or revise the goals and objectives contained in the plan. At a minimum, the committee will review and update the plan every five years,

2: LOCAL PROFILE

Community Setting

The City of Springfield is the largest city in the Pioneer Valley Region. It is the third largest community in the Commonwealth of Massachusetts. Together with the City of Holyoke and Chicopee and their neighboring communities, Springfield comprises the fourth largest metropolitan area in New England.

A largely developed and urbanized city comprised of 33 square miles (approximately 21,147 acres), Springfield is located on the eastern bank of the Connecticut River in Western Massachusetts, just north of the Connecticut state line.

Settled in 1636, Springfield has several historic and distinct neighborhoods in addition to a newly revitalized Central Business District. These neighborhoods earned the city its nickname of the “City of Homes.” Springfield is also known as the “City of Firsts” paying homage to its history as the birthplace of the first gasoline-powered automobile and motorcycle, and the game of basketball.

Springfield is home to eight of the region's twenty largest employers, including Mass Mutual Life Insurance, Solutia (a Division of Monsanto Chemical Co.), and Smith & Wesson. Major cultural institutions include the Springfield Symphony, City Stage, Springfield Civic Center, and the Springfield Library and Museums Association – all of which are located in a historic downtown campus setting. Springfield is also home to four colleges and four hospitals.

Even with vibrant, historic neighborhoods, a newly reinvigorated downtown and an active cultural base, Springfield, like many urban areas in the Northeast, has seen a decrease in population in recent years. Since 1990, the City's population declined an estimated 3.1% to 152,082.

Infrastructure

Springfield's infrastructure reflects its dense, urban roots coupled with its location along the Connecticut River.

Roads and Highways

Springfield is located just south of the intersection of two of New England's most significant interstate highways – Interstate 91, traveling north-south from Canada to the Connecticut shoreline, and Interstate 90 (the Massachusetts Turnpike), traveling east-west from Boston to halfway across the country. While Interstate 91 actually passes through the city, between the river and downtown Springfield, access to Interstate 90 from the city is provided by a bypass route, Interstate 291. Other key routes include Route 20, Route 83, and Route 21, in addition to several major thoroughfares.

Rail and Transit

The region's interstate bus and Amtrak train stations are located in downtown Springfield. The City is also the hub of the regional bus service provided by the Pioneer Valley Transit Authority.

Public Water and Sewer Service

Springfield's public water and sewer service is managed through the Springfield Water and Sewer Commission.

The Commission's source of supply is the Little River in Western Massachusetts with raw water storage at its Borden Brook and Cobble Mountain Reservoirs. All water is filtered at the West Parish Filtration Plant in Westfield, then stored in tanks at Provin Mountain, before flowing through 580 miles of distribution system piping to the Commission's customers in Springfield and Ludlow. All water flows by gravity from the reservoirs to the Commission's service area. In addition, the Commission owns and maintains four drinking water pumping stations to increase pressure in certain portions of the service area.

The Springfield Regional Wastewater Treatment Facility (SRWTF) is the largest of 171 activated sludge facilities in New England and second in size in the region only to Boston's primary treatment plant. Located in Agawam, Massachusetts, the SRWTF presently treats the domestic and industrial wastes from eight communities, including Springfield.

The Commission serves a total population of approximately 250,000. The Commission services approximately 43,500 water and 550 fire accounts throughout the water distribution system in Springfield and Ludlow. The Commission services approximately 36,400 accounts in the Springfield sewer system.

Natural Resources

Even as a regional center that is mostly built-out, Springfield is continually shaped by several of its natural resources and amenities.

Water Resources

The most significant of Springfield's natural resources is probably the Connecticut River flowing along its western border.

There are several ponds and small lakes in Springfield. These are: Bass Pond, Mill Pond, Breckwood Lake, Island Pond, Lake Lookout, Porter Lake, Watershops Pond, Loon Pond, Five Mile Pond, Long Pond, Mona Lake, Dimmock Pond, and Lake Lorraine.

There are several tributaries to the Chicopee and Connecticut Rivers. These are: Abby Brook, North Branch Mill River, South Branch Mill River, and Schneelock Brook.

Additionally, Springfield contains about 115 acres of wetlands, and several miles of inner riparian zone habitat.

These water resources all provide important wildlife habitat, flood storage capacity, and recreation outlets, and in some cases they are water supply sources as well.

Forests and Fields

Almost 20% of the total acreage of Springfield remains forested, approximately 4,100 acres. The predominant forest habitat in Springfield is the northern hardwoods hemlock. Species vary with the topography but consist primarily of hemlock, beech, sugar maple, and yellow birch.

There are also a few hundred (approximately 383) acres of cropland, pastureland, and open land in Springfield, providing additional vegetation types and habitat opportunities.

It is worthwhile to note that the majority of these forested and open lands are within Springfield's public parks.

Development

Springfield's growth was initiated first by farmers, then by industry and commercial development, and more recently commercial and residential redevelopment. But the city's topography, soils, and physiography (lakes, rivers, wetlands and watershed areas) shape and constrain these land use patterns.

In addition to other factors, zoning and other land use regulations constitute Springfield's "blueprint" for its future. Land use patterns over time will continue to look more and more like the city's zoning map until the city is finally "built out"—that is, there is no more developable land left. Therefore, in looking forward over time, it is critical that the city focus not on the current use and physical build-out today, but on the potential future uses and build-out that are allowed under the city's zoning map and zoning bylaws. Zoning is the primary land use tool that the city may use to manage development and direct growth to suitable and desired areas while also protecting critical resources and ensuring that development is in keeping with the city's character.

The Springfield Zoning Bylaw is currently under revision, expected to be adopted by the end of 2007.

The current Bylaw establishes fifteen base zones and two overlay zones:

- Seven residential districts: Residence A-1, Residence A, Residence B, Residence B-1, Residence C, Residence C-1 (Residential Project Districts), Residence C-2 (High-Rise Apartment Districts)
- One residence-office district: Office A (Residence-Office)
- Two commercial districts: Commercial P (Parking Lot), Commercial A (Neighborhood)
- Three business districts: Business A (General), Business B (Service), Business C (CBD)

- Two industrial districts: Industrial Park, Industrial A
- One conservation district: Connecticut Riverfront R
- One revitalization district: West Columbus Avenue Urban Renewal District
- Three overlay districts: Floodplain District, Site Development and Design District, State Street Interim Overlay District

Although all appropriate zoning is relevant to protecting the health and safety of the City residents, two of Springfield's districts are specifically relevant to natural hazard mitigation:

- Floodplain District - The floodplain overlay applies to those areas within the boundary of the one-hundred-year flood that are considered hazardous according to FEMA. It limits some uses in order to prevent potential flood damage.
- Connecticut Riverfront District - This purpose of this district is to protect and preserve the river from potentially damaging pollution or environmental degradation by regulating certain uses along its banks. The regulations state specific prohibited and restricted uses, regulates drainage, details site plan requirements and special permit procedures.

The Zoning Bylaw also establishes a Site Plan/Special Permit Approval procedure for specific uses and structures within Springfield. This review allows the Special Permit Granting Authority the ability to review development to ensure that the basic safety and welfare of the people of Springfield are protected, and includes several specific evaluation criteria that are relevant to natural hazards.

Current Development Trends

Today, the vast majority of Springfield's 33 square miles is residential land, totaling close to 9,960 acres. Undeveloped land is the second most prolific land use, totaling close to 4,510 acres. Land used for commercial and industrial uses constitutes a relatively large 1,265 acres, and 1,523 acres, respectively. There is also a significant amount of land characterized as urban open/public land at 1,593 acres, and there are 694 acres of outdoor recreational land. Agricultural land constitutes a relatively small 112 acres, as to be expected in an urbanized area.

Springfield's zoning laws and land use regulations reflect the needs of a mature community that is, for the most part, completely built out. The City encourages uses in commercial, residential and industrial locations, and promotes residential density in the downtown. Development occurs where public infrastructure already exists.

Development in Hazard Areas

Hazards identified in this plan are regional risks and, as such, all new development falls into the hazard area. The exception to this is flooding. According to the Community Information System (CIS) of FEMA, there were 75 residential structures located within the Special Flood Hazard Area (SFHA) in Springfield as of August 2005, the most current records in the CIS for the City of Springfield. It should be noted that Grochmal Avenue

has several mobile homes located in the 100-year floodplain, and that the 500-year floodplain includes downtown parcels between Bliss Street and Leete Street.

3: HAZARD IDENTIFICATION & ANALYSIS

Natural Hazard Profiling Methodology¹

In order to adeptly profile each of the hazards, a Hazard Identification and Analysis Matrix was prepared to organize the information that was gathered for this project.

The matrix is organized into the following sections: Type of Hazard, Location of Occurrence, Extent of Impacts, Previous Occurrences, Probability of Future Occurrence, and Hazard Index. The Hazard Index was completed to rank the hazards according to the frequency of occurrence and the amount of potential damage likely to occur. The Hazard Index forms the basis for concentrating the future mitigation efforts outlined in this plan. A description of each of the matrix categories is provided below. The completed Matrix is shown as Table 3.1 (Section 3, page 9).

Location of Occurrence

The classifications are based on the area of the City of Springfield that would potentially be affected by the hazard. The following scale was used:

Location of Occurrence	Percentage of City Impacted
Large	More than 50% of the city affected
Medium	10 to 50% of the city affected
Small	Less than 10% of the city affected

Extent of Impacts

The extent of direct impacts an affected area could potentially suffer were classified according to the following scale:

Extent of Impacts	Magnitude of Multiple Impacts
Catastrophic	Multiple deaths and injuries possible. More than 50% of property in affected area damaged or destroyed. Complete shutdown of facilities for 30 days or more.

¹ Source: information adapted from Town of Holden Beach, NC Community-Based Hazard Mitigation Plan, July 15, 2003, and Hyde County, NC Multi-Hazard Mitigation Plan, Sept 2002; and the Massachusetts Emergency Management Agency (MEMA).

Critical	Multiple injuries possible. More than 25% of property in affected area damaged or destroyed. Complete shutdown of facilities for more than 1 week.
Limited	Minor injuries only. More than 10% of property in affected area damaged or destroyed. Complete shutdown of facilities for more than 1 day.
Minor	Very few injuries, if any. Only minor property damage and minimal disruption on quality of life. Temporary shutdown of facilities.

Previous Occurrences

Whether or not previous hazard events had occurred is also included, with detailed descriptions of specific previous occurrences within the hazard identification and vulnerability assessments, if necessary.

Probability of Future Occurrence

The likelihood of a future event for each natural hazard was classified according to the following scale:

Table C.3: Frequency of Occurrence and Annual Probability of Given Natural Hazard	
Frequency of Occurrence	Probability of Future Event
Very High	70-100% probability in the next year
High	40-70% probability in the next year
Moderate	10-40% probability in the next year
Low	1-10% probability in the next year
Very Low	Less than 1% probability in the next year

Hazard Index

The hazard index ratings were determined after assessing the frequency, location and impact classifications for each hazard. The hazard index ratings are based on a scale of 1 (highest risk) through 5 (lowest risk). The ranking is qualitative and is based, in part, on local knowledge of past experiences with each type of hazard. The size and impacts of a natural hazard can be unpredictable however; many of the mitigation strategies currently in place and many of those proposed for implementation can be applied to the expected natural hazards, regardless of their unpredictability.

The Hazard Ratings are labeled as follows:

- 1 – High Risk
- 2 – Medium-High Risk
- 3 – Medium Risk
- 4 – Medium Low Risk
- 5 – Low Risk

Profiling the Natural Hazards

Historical research, conversations with local officials and emergency management personnel, available hazard mapping and other weather-related databases were used to identify and profile the natural hazards which are most likely to have an impact on Springfield.

Each of these hazards was assessed by the Committee for location of occurrence, extent, previous occurrences, and probability of future events. This resulted in a ranking of hazard, by risk, see Table 3.1. More detailed descriptions of each of the points of analysis are included in the Identification and Vulnerability Assessment (below).

Table 3.1: Hazard Profiling and Risk Index Worksheet

Type of Hazard	Location	Extent of Impacts	Previous Occurrences	Probability of Future Events	Hazard Risk Index Rating
Flooding (100-year)	Large	Limited	Yes	Low	2
Flooding (localized)	Medium	Minor	Yes	Very High	1
Severe Snow/Ice Storms	Large	Limited	Yes	Very High	1
Hurricanes/Severe Wind	Large	Minor	Yes	Low	2
Tornado/Microburst	Small	Catastrophic	No	Very Low	4
Wildfire/Brushfire	Small	Minor	Yes	High	3
Earthquake	Large	Catastrophic	No	Very Low	4
Dam Failure	Small	Minor	No	Very Low	5
Drought	Small	Minor	No	Very Low	5
Man-Made Hazard: Hazardous Materials	Large	Limited	No	Very Low	3

Natural Hazard Identification and Vulnerability Assessment

The following is a description of natural and manmade disasters, and the areas affected by them, that have or could affect the City of Springfield. The *Past and*

Potential Hazards/Critical Facilities Map (Appendix C) reflects the contents of this analysis.

Vulnerability Assessment Methodology

In order to determine estimated losses due to natural hazards in Springfield, each hazard area was analyzed with results shown below. The data below was calculated using FEMA's *Understanding Your Risks: Identifying Hazards and Estimating Losses*, August 2001.

Total Value of all Structures in Springfield (2006): \$8,144,105,040

Total Number of Housing Units (2010): 61,706

Median Value of a Home in Springfield (2006-2010): \$155,500

Average Household Size: 2.6 persons

Human losses are not calculated during this exercise, but could be expected to occur depending on the type and severity of the hazard. Most of these figures exclude both the land value and contents of the structure. The damage calculations are rough estimate and likely reflect worst-case scenarios.

Flooding

The average annual precipitation for Springfield and surrounding areas in northwestern Massachusetts is 46 inches. There are three major types of storms that bring precipitation to Springfield. Continental storms that originate from the west continually move across the region. These storms are typically low-pressure systems that may be slow-moving frontal systems or more intense, fast-moving storms. Precipitation from coastal storms, also known as nor'easters, that travel into New England from the south constitute the second major storm type. In the late summer or early fall, the most severe type of these coastal storms, hurricanes, may reach Massachusetts and result in significant amounts of rainfall. The third type of storm is the result of local convective action. Thunderstorms that form on warm, humid summer days can cause locally significant rainfall.

Floods can be classified as either flash floods, which are the product of heavy, localized precipitation in a short time period over a given location or general floods, which are caused by precipitation over a longer time period in a particular river basin. There are several local factors that determine the severity of a flooding event, including: stream and river basin topography, precipitation and weather patterns, recent soil moisture conditions, amount of impervious surface area, and the degree of vegetative clearing. Furthermore, flooding can be influenced by larger, global climate events. Global warming and climate change have the potential to shift current rainfall and storm patterns. Increased precipitation is a realistic result of global warming, and could

potentially increase the frequency and intensity of flooding in the region. Currently, floods occur and are one of the most frequent and costly natural hazards in the United States.

Flash flooding events typically occur within minutes or hours after a period of heavy precipitation, after a dam or levee failure, or from a sudden release of water from an ice jam. Most often, flash flooding is the result of a slow-moving thunderstorm or the heavy rains from a hurricane. In rural areas, flash flooding often occurs when small streams spill over their banks. However, in urbanized areas, flash flooding is often the result of clogged storm drains (leaves and other debris) and the higher amount of impervious surface area (roadways, parking lots, roof tops).

In contrast, general flooding events may last for several days. Excessive precipitation within a watershed of a stream or river can result in flooding particularly when development in the floodplain has obstructed the natural flow of the water and/or decreased the natural ability of the groundcover to absorb and retain surface water runoff (e.g., the loss of wetlands and the higher amounts of impervious surface area in urban areas).

A floodplain is the relatively flat, lowland area adjacent to a river, lake or stream. Floodplains serve an important function, acting like large "sponges" to absorb and slowly release floodwaters back to surface waters and groundwater. Over time, sediments that are deposited in floodplains develop into fertile, productive farmland like that found in the Connecticut River valley. In the past, floodplain areas were also often seen as prime locations for development. Industries were located on the banks of rivers for access to hydropower. Residential and commercial development occurred in floodplains because of their scenic qualities and proximity to the water. Although periodic flooding of a floodplain area is a natural occurrence, past and current development and alteration of these areas will result in flooding that is a costly and frequent hazard. In addition to damage of buildings directly in the floodplain, development can result in a loss of natural flood storage capacity and can increase the water levels in water bodies. Flood levels may then increase, causing damage to structures not normally in the flood path.

The Floodplain Map for the City of Springfield shows the 100-year and 500-year flood zones identified by FEMA flood maps. The 100-year flood zone is the area that will be covered by water as a result of a flood that has a one percent chance of occurring in any given year. Likewise, the 500-year flood has a 0.2 percent chance of occurring in any given year. In Springfield, there are several floodplain areas – primarily along the Connecticut River, North Branch Mill River, South Branch Mill River, Mill Pond and Abby Brook. There are some smaller 500-year floodplains mapped as well, along Monsantor Street, Grochmal Street, Avocado Street, Beaumont Avenue, and Fisk Street.

The major floods recorded in Western Massachusetts during the 20th century have been the result of rainfall alone or rainfall combined with snowmelt. Springfield has experienced many flooding events over the last decade. Generally, these small floods have had minor impacts, temporarily impacting roads and residents' yards. However, city-wide flooding on October 8, 2005 caused an apartment building's roof to collapse,

city-wide flooding on October 15, 2005 blocked sections of Interstate-91, and another large storm on July 11, 2006² caused property damage in Springfield and several municipalities around the state.

As described above, flooding can happen on a range of scales. For the purposes of this analysis, the hazard has been broken into two separate types – **Flooding (100-year)** and **Flooding (localized)**. Risk and vulnerability assessment for these separate types of flooding are analyzed below.

Flooding (100-year base flood): Medium-High Risk

There are approximately 474 acres of land within the FEMA mapped 100-year floodplain and 674 acres of land within the 500-year floodplain within the City of Springfield. According to the Community Information System (CIS) of FEMA, there were 75 residential structures located within the Special Flood Hazard Area (SFHA) in Springfield as of August 2005, the most current records in the CIS for the City of Springfield. Therefore, a vulnerability assessment for a 100-year flood equals approximately \$22.9 million of damage to residential structures, with approximately 180 people impacted.

Specific vulnerability assessments were estimated for sites within the SFHA which have been susceptible to 100-year floods in the past, they are described below. At this time the city of Springfield has no repetitive loss properties as defined by FEMA's NFIP.

Previous Occurrences

During the fall of 2005, heavy and continuous rains during the month of October caused failure of a manhole, frame and cover on Mill Street in Springfield, resulting in the destruction of sewer access manhole and a large portion of the paved street. Cost of replacement of the manhole was approximately \$20,000 and re-paving the street cost of \$10,000.

Flooding (localized) – High Risk

In addition to the floodplains mapped by FEMA for the 100-year and 500-year flood, Springfield often experiences minor flooding at isolated locations due to drainage problems, or problem culverts.

There are a total of 27 problem culverts or other localized flooding areas all over the city, and have been mapped on the Past and Potential Hazards/Critical Facilities Map (Appendix C). Most of the flood hazard areas listed here were identified due to known past occurrence in the respective area. There are many areas with no record of previous flood incidents that could be affected in the future by heavy rain and runoff. Additionally, the vast majority of culverts throughout the city tend to be impacted by beavers, so localized flooding can potentially occur at any culvert crossing.

² Information on 2005 and 2006, was accessed on National Climatic Data Center website (www.ncdc.noaa.gov/oa/ncdc.html) on December 10, 2007.

To determine the vulnerability of the city to localized flood events, the property within identified areas was visually analyzed using aerial photography (Pictometry), which allowed structures to be identified and tallied. Specific vulnerability assessments were estimated for sites which have been susceptible to localized flooding in the past, and are described below.

Location

Island Pond Flooding

Hazard – Island Pond receives storm water runoff from four (4) storm drainage areas and pond levels rise according to the size and frequency of the rain events. There is no outlet for the pond therefore the pond elevation continues to raise causing flooding to backyards and eventually residential cellars of the homes that abut the pond. Currently there is a pump in one of the inlet manholes that turns on at preset elevations and slowly pumps the pond into an adjacent sanitary sewer. This system pumps relatively clean storm runoff into the sanitary system and there is an unnecessary cost associated with the treatment of this water. During heavy rain events the system is unable to manage the flows and flooding occurs. In addition there are pump breakdowns and inlet blockages that contribute to the problem.

Mitigation – Install a storm water pump station and new storm drain that redirects storm water up Surrey Road and discharges to a conservation area in the Water shops Pond drainage basin.

Estimated Project Cost: \$500,000.00

Abbe Brook Flooding

Hazard – Abbe Brook has several problem areas that require mitigation. Several outlets have severe erosion which has undermined the headwalls and storm drains causing large areas of embankment to collapse and the siltation has decreased downstream capacities.

Mitigation – Bank stabilization, outlet reconstruction and channel restoration projects are all necessary to restore capacity to the bank.

Estimated Cost: \$1,000,000.00

Drainage Culvert Reclamation

Hazard – The City has several miles of drainage ditches in need of restoration, most notably along Roosevelt Ave from Alton St. to Wilbraham Rd., parallel to Industry Ave. and cross-country from Peekskill Ave to Greenleaf Community Center. During heavy rain events Roosevelt Ave. floods under State St. Also, there are concerns of flooding and property damage due to decreased capacity. Culvert restoration is also necessary for Tiffany Street and Dickinson Street locations.

Mitigation – Clean and reestablished design capacities throughout the system.

Estimated Project Cost: \$610,000.00

Severe Snow/Ice Storm – High Risk

Severe winter storms can pose a significant risk to property and human life because the rain, freezing rain, ice, snow, cold temperatures and wind associated with these storms can disrupt utility service, phone service, and make roadways extremely hazardous. Severe winter storms can also be deceptive killers. The types of deaths that can occur as a result of a severe winter storm include: traffic accidents on icy or snow-covered roads, heart attacks while shoveling snow, and hypothermia from prolonged exposure to cold temperatures. Infrastructure and other property are also at risk from severe winter storms and the associated flooding that can occur following heavy snow melt. Power and telephone lines, trees, and telecommunications structures can be damaged by ice, wind, snow, and falling trees and tree limbs. Icy road conditions or roads blocked by fallen trees may make it difficult to respond promptly to medical emergencies or fires. Prolonged, extremely cold temperatures can also cause inadequately insulated potable water lines and fire sprinkler pipes to rupture and disrupt the delivery of drinking water and cause extensive property damage.

Location

Severe winter weather occurs regionally and therefore would impact the entire city,

Extent

New England generally experiences at least one or two severe winter storms each year with varying degrees of severity. Research on climate change indicates that there is great potential for stronger, more frequent storms as the global temperature increases. Severe winter storms typically occur during January and February; however, they can occur from late September through late April.

The Northeast Snowfall Impact Scale (NESIS) developed by Paul Kocin of The Weather Channel and Louis Uccellini of the National Weather Service ([Kocin and Uccellini, 2004](#)) characterizes and ranks high-impact Northeast snowstorms. These storms have large areas of 10 inch snowfall accumulations and greater. NESIS has five categories: Extreme, Crippling, Major, Significant, and Notable. The index differs from other meteorological indices in that it uses population information in addition to meteorological measurements. Thus NESIS gives an indication of a storm's societal impacts.

NESIS scores factor in the area affected by the snowstorm, the snow, and the number of people living in the path of the storm. The NESIS score varies from around one for smaller storms to over ten for extreme storms. The raw score is then converted into one of the five NESIS categories. The largest NESIS values result from storms producing heavy snowfall over large areas that include major metropolitan centers.

In the past, heavy snow fall events (such as the blizzards of 1978 and 1993) can lead to more than 20 inches of snow falling on Springfield. This results in damage to utility lines and reduces mobility along high-traffic roadways. Winter storms with severe ice damage extensively above-ground utility lines. As snow and ice accumulates, falling limbs can lead to damages to infrastructure and buildings. In addition, during heavy snow years, accumulations can reach several feet deep. Springfield's historic road network often creates some steep grades, dangerous intersections, or narrow throughways, sometimes making plowing difficult and causing snow and ice hazards.

Previous Occurrences

Springfield's recent history has not recorded any loss of life due to the extreme winter weather, but there are usually several incidents of property damage or personal injury each winter. In addition, during heavy snow years, accumulations can reach several feet deep. Springfield's historic road network often creates some steep grades, dangerous intersections, or narrow throughways, sometimes making plowing difficult and causing snow and ice hazards.

On October 31, 2011, the City of Springfield was hit with a freak snowstorm that crippled the City, leaving many residents without power for seven days, and the City with a cost of \$30 million to clean-up.

- Springfield has been subject to 23 winter storms categorized as major to extreme according to the NESIS scale since 1960. Additional historically significant winter storms to affect Springfield include the Great Snow of 1717 and the Blizzard of 1888
- Moderate risk town wide due to snow, ice and extreme cold.
- Elderly are affected by extreme weather.

Probability of Future Events

Based on the NESIS scale, Springfield is at risk of a major to extreme winter storm in any given year is slightly less than 50 percent.

Hurricanes/Severe Wind – Medium-Low Risk

Hurricanes are violent rainstorms with strong winds that can reach speeds of up to 200 miles per hour, and large amounts of precipitation. Hurricanes generally occur between June and November and can result in flooding and wind damage to structures and above-ground utilities. Severe wind can also occur in the absence of a hurricane, especially impacting mountain tops. Global warming will increase the threat of hurricanes and severe wind as oceans and the atmosphere warms. Climate change research indicates that storms like hurricanes will become more intense and more frequent in the future.

Location

All of Springfield is at risk from hurricanes with ridge tops more susceptible to wind damage and the flood-prone portions of town to flooding from the heavy rains.

Extent

Springfield's location in Western Massachusetts reduces the risk of extremely high winds that are associated with hurricanes, although it can experience some high wind events. During hurricanes or severe wind events, the city has experienced small blocks of downed timber and uprooting of trees onto structures.

- Estimated wind damage: 5% of the structures with 10% damage, \$40,720,525;
- Estimated flood damage: 10% of the structures with 20% damage, \$162,882,101;
- Vulnerability assessment for a hurricane event (both wind and flood damages): \$203,602,626;
- Cost of repairing or replacing the roads, bridges, utilities, and contents of structures is not included.

Previous Occurrences

In Massachusetts, 17 hurricanes have had landfall since 1851, three of which impacted Western Massachusetts. These include Hurricane Carol in 1954 and Hurricane Gloria in 1985. Recently, the City was hit with tropical storm Irene, which caused major flooding throughout parts of the city. Hurricanes are usually ranked category 1-5, using the Saffir-Simpson Scale, with category 5 hurricanes being the most severe. Both Hurricane Carol and Gloria were category 1-2 storms, meaning winds ranged from 74-110 mph with the potential for some roofing or window damage to buildings, damage to unanchored mobile homes, trees, or poor construction, and/or some minor flooding.

- Connecticut River corridor at risk.
- 1938 hurricane was a major event - wind damage and flooding statewide.
- Power and phone lines - disruptions of services.
- Flooding/washing of evacuation routes.

Table 3.2 Major Non-Winter Storms to Affect Springfield Area		
Hurricane/Storm Name	Year	Saffir/Simpson Category (when reached MA)
Great Hurricane of 1938	1938	Unclear, 3 or 4
Great Atlantic Hurricane	1944	1
Carol	1954	3
Edna	1954	1
Diane	1955	Tropical Storm
Donna	1960	Unclear, 1 or 2
Groundhog Day Gale	1976	Not Applicable
Gloria	1985	1
Bob	1991	2
Floyd	1999	Tropical Storm
Irene	2011	Tropical Storm

Probability of Future Events

Based upon the past events, it is reasonable to say that there is a low frequency of major hurricanes in Springfield (once every fifty years is less than a one percent chance of any such storm occurring in a given year) while the possibility of a less severe hurricane or tropical storm affecting Springfield in any given year is approximately 10 percent.

Tornadoes/Microbursts – Medium-Low Risk

Tornadoes are swirling columns of air that typically form in the spring and summer during severe thunderstorm events. In a relatively short period of time and with little or no advance warning, a tornado can attain rotational wind speeds in excess of 250 miles per hour and can cause severe devastation along a path that ranges from a few dozen yards to over a mile in width. The path of a tornado may be hard to predict because they can stall or change direction abruptly. Within Massachusetts, tornadoes have occurred most frequently in Worcester County and in communities west of Worcester, including towns and cities in Hampden County.

Of additional concern are microbursts, which often do tornado-like damage and can be mistaken for tornadoes. In contrast to the upward rush of air in a tornado, air blasts rapidly downward from thunderstorms to create microbursts. Microbursts and tornadoes are expected to become more frequent and more violent as the earth's atmosphere warms, due to predictions of climate change from global warming.

Location

The hazard area for tornadoes in Springfield varies according to the intensity and size of the tornado. There have not been enough tornadoes in Springfield to accurately predict sections of town that are more likely to experience a tornado.

Extent

Because tornadoes and microbursts rarely occur in this part of the country, assessing damages is difficult. Furthermore, buildings have not been built to Zone 2, Design Wind Speed Codes. The entire City of Springfield is vulnerable.

- Tornadoes/microburst hazard estimates 20% damage to 10% of structures in the city;
- Vulnerability assessment estimates in damages; \$162,882,101
- Estimated cost does not include building contents, land values or damages to utilities.

Previous Occurrences

On June 1, 2011, a EF-3 tornado touched down in Springfield, clearing six miles of our city and destroying thousands of structures, schools and infrastructure that resulted in a five day State of Emergency. The immediate aftermath brought a level of collaboration from public safety, health, engineering, as well as area nonprofits and businesses that was unprecedented. For example, the Springfield Fire Department received 15,070

emergency calls and responded to 15,953 emergencies. Fire personnel responded to emergencies from people literally on the street or outside their homes who were unable to call due to downed phone and power lines). For several weeks following the tornado the city's Office of Emergency Preparedness facilitated meetings between the City's leadership, local utility companies, the Pioneer Valley Red Cross, the Salvation Army and other critical businesses as needed.

After the critical response that followed for weeks/months afterward, the City of Springfield, working with DevelopSpringfield, the Springfield Redevelopment Authority, neighborhood councils, private businesses, concerned residents and others used this catastrophic event as a catalyst to create the "Rebuild Springfield Master Plan". While the Rebuild Springfield initiative was created in response to the June 1st tornado, the scope of the initiative is far greater than rebuilding, and includes tools that will serve to rethink Springfield's future forever. Further, the Rebuild Springfield Plan incorporated previous plans, reports, and studies from a variety of organizations and stakeholders – to include City plans and documents, neighborhood plans, ULI reports, and many other studies. (Appendix F).

Springfield's location in Hampden County places it within the vicinity of the part of Massachusetts that experiences tornadoes more frequently than other portions of the State. Four tornadoes with an F1 ranking have been recorded in Springfield since 1950, but none of them caused any known damage. In Western Massachusetts, the majority of sighted tornadoes have occurred in a swath east of Springfield, known as "tornado alley." Fifteen incidents of tornado activity (all F2³ or less) occurred in Hampden County between 1959 and 2005.

Probability of Future Events

Based upon the past events, it is reasonable to say that there is a low frequency of tornadoes in Springfield with one tornado occurring approximately every 15 years.

Wildfires/Brushfire – Medium Risk

According to FEMA, there are three different classes of wildland fires: surface fires, ground fires and crown fires. The most common type of wildland fire is a surface fire that burns slowly along the floor of a forest, killing or damaging trees. A ground fire burns on or below the forest floor and is usually started by lightning. Crown fires move quickly by jumping along the tops of trees. A crown fire may spread rapidly, especially under windy conditions. While wildfires or brushfires have not been a significant problem in Springfield, there is always a possibility that changing land use patterns and weather conditions will increase a community's vulnerability. For example, drought conditions can make forests and other open, vegetated areas more vulnerable to ignition. Once the fire starts, it will burn hotter and be harder to extinguish. Soils and root systems starved for moisture are also vulnerable to fire. Residential growth in rural, forested areas increases the total area that is vulnerable to fire and places homes and

³ F2 refers to the commonly used Fujita Tornado Damage Scale which ranks tornados F0-F5 depending on estimated wind speeds and damages, with F5 the most severe.

neighborhoods closer to areas where wildfires are more likely to occur. Global climate changes may also influence precipitation patterns, making the region more susceptible to drought and therefore, wildfires.

Hampden County has approximately 273,000 acres of forested land, which accounts for 67% of total land area. Forest fires are therefore a potentially significant issue.

Location

No particular section of Springfield is especially susceptible to wildfire because all of the forested areas are relatively isolated from each other. The largest contiguous area of woodland in Springfield is Forest Park in the southeast corner of the city.

Extent

In Springfield, approximately 19% of the city's total land area is in forest, or about 4,114 acres, and is therefore at risk of fire.

Previous Occurrences

Illegal brushfires are somewhat common in Springfield. The fires that occur are small and quickly contained. According to the Springfield Fire Department, there were approximately 320 unauthorized burns (or brushfires) in 2011.

However, moderate risk exists for potential wildfire incidents, especially near some of the city's forested, agricultural, and recreational lands. Forested and agricultural areas with high fuel content have more potential to burn. In addition, it is often very difficult to access some of the locations to extinguish the brushfire.

- Up to 4 structures could be impacted by a wildfire in one of the City's agricultural areas;
- Assuming 100% damage to 100% of the structures, not including costs repairing or replacing any power lines, telephone lines, and contents of structures;
- Vulnerability assessment estimates approximately \$1,220,000 in damages for a wildfire.

Probability of Future Events

Based upon the past events, it is reasonable to say that there is a low frequency of wildfires in Springfield.

Earthquakes – Medium - Low Risk

An earthquake is a sudden, rapid shaking of the ground that is caused by the breaking and shifting of rock beneath the Earth's surface. Ground shaking from earthquakes can rupture gas mains and disrupt other utility service, damage buildings, bridges and roads, and trigger other hazardous events such as avalanches, flash floods (dam failure) and fires. Un-reinforced masonry buildings, buildings with foundations that rest on filled land or unconsolidated, unstable soil, and mobile homes not tied to their foundations are at risk during an earthquake. Earthquakes can occur suddenly, without

warning, at any time of the year. New England experiences an average of 30 to 40 earthquakes each year although most are not noticed by people.

Location

In the event of an earthquake, all of Westfield would be affected with some portions more impacted than others, depending on the magnitude of the earthquake and the underlying population density.

Table 3.3: New England Earthquakes (1924-2002)⁴ magnitude 4.2 or higher		
Location	Date	Magnitude
Ossipee, NH	December 20, 1940	5.5
Ossipee, NH	December 24, 1940	5.5
Dover-Foxcroft, ME	December 28, 1947	4.5
Kingston, RI	June 10, 1951	4.6
Portland, ME	April 26, 1957	4.7
Middlebury, VT	April 10, 1962	4.2
Near NH Quebec Border, NH	June 15, 1973	4.8
West of Laconia, NH	Jan. 19, 1982	4.5
Plattsburg, NY	April 20, 2002	5.1

Table 3.4: New England States Record of Earthquakes⁴		
State	Years of Record	Number of Earthquakes
Connecticut	1568 - 1989	137
Maine	1766 - 1989	391
Massachusetts	1627 - 1989	316
New Hampshire	1728 - 1989	270
Rhode Island	1766 - 1989	32
Vermont	1843 - 1989	69
New York	1737 - 1985	24
Total Earthquakes in New England (1568-1989)		1,239

⁴ Northeast States Emergency Consortium Web site: www.nesec.org/hazards/earthquakes.cfm

Extent

Massachusetts introduced earthquake design requirements into their building code in 1975. However, these specifications apply only to new buildings or to extensively-modified existing buildings. Buildings, bridges, water supply lines, electrical power lines and facilities built before 1975 may not have been designed to withstand the forces of an earthquake. The seismic standards have also been upgraded with the 1997 revision of the State Building Code.

- Because many of the buildings were built before 1975 (an estimated 78% of 62, 706), there is potential for serious damage throughout Springfield;
- Structures are mostly wood frame construction, so loss estimates predict 20% of city assessed value, not including costs of repairing or replacing roads, bridges, power lines, telephone lines, or the contents of the structures;
- Vulnerability assessment estimates approximately \$1,628,821,008.

Previous Occurrences

Nineteen earthquakes, intensity V (Modified Mercalli scale) or greater, have centered in Massachusetts since it was colonized by Europeans. A shock in 1755 reached intensity VIII at Boston and was felt across the State. In addition, Massachusetts was affected by some of the more severe Canadian shocks plus the earthquake of 1929 that centered on Grand Banks of Newfoundland.

Strong earthquakes in the St. Lawrence Valley in 1638, 1661, 1663, and 1732 were felt in Massachusetts. The 1638 and 1663 shocks damaged chimneys at Plymouth, Salem, and Lynn. On June 11, 1643, Newbury, Massachusetts, was strongly shaken. Again in 1727 (November 9) an earthquake described as "tremendous" in one report and "violent" in another caused much damage at Newbury. The shock was felt from the Keenebec River to the Delaware River and from ships at sea to the extreme western settlements. Several strong aftershocks were reported from the area through February 1728.

Tables 3.3 & 3.4 contain information regarding most of the earthquakes, including all of affecting New England, the significant ones. None have been noted to cause any damage in Springfield or the surrounding area.

Probability of Future Events

Based upon the past events, it is reasonable to say that there is a low frequency of major earthquakes in Springfield (there have been no earthquakes over 4.2 on the Richter scale in nearly 100 years) while the possibility of a less severe earthquake or tropical storm affecting Springfield in any given year is slightly less than 1 percent but these are unlikely to cause any significant damage.

Dam Failure – Low Risk

Although dams and their associated impoundments provide many benefits to a community, such as water supply, recreation, hydroelectric power generation, and

flood control, they also pose a potential risk to lives and property. Dam failure is not a common occurrence but dams do represent a potentially disastrous hazard. When a dam fails, the potential energy of the stored water behind the dam is released. Often dam breaches lead to catastrophic consequences as the water ultimately rushes in a torrent downstream flooding an area engineers refer to as an “inundation area.” The number of casualties and the amount of property damage will depend upon the timing of the warning provided to downstream residents, the number of people living or working in the inundation area, and the number of structures in the inundation area.

Many dams in Massachusetts were built in the 19th century without the benefit of modern engineering design and construction oversight. Dams can fail because of structural problems due to age and/or lack of proper maintenance. Dam failure can also be the result of structural damage caused by an earthquake or flooding brought on by severe storm events. Most earthen dam failures occur when floodwaters above overtop and erode the material components of the dam.

Location

According to DCR sources, as well as local knowledge, there are currently twelve (12) dams⁵ in Springfield. The follow table identifies the dams within the city as well as whether they are classified as low, significant, or high hazard.

Table 3-5: Dams in Westfield					
Dam name/ date built	ID	Owner	Purpose	Condition/last inspected	Hazard Risk
Watershops Pond Dam	MA00569	City of Springfield	Recreation		High
Van Horn Park Lower Dam	MA00571	City of Springfield	Recreation	Poor/10-06-07	High
Breckwood Pond	MA00570	City of Springfield	Recreation	Satisfactory	Significant
Forest Park Middle Pond Dam	MA02358	City of Springfield	Recreation	Satisfactory/ 12-21-06	Significant
Forest Park Upper Pond Dam	MA00568	City of Springfield	Recreation	Poor/ 12-21-06	Significant
Monsanto Chemical Co. Upper Dam	MA00573	Solutia, Inc	Recreation	Unsafe/ 12-7-06	Low
Putnam's Puddle Dam	MA00572	City of Springfield	Recreation	Breached	Low
Baystate Plumbing & Heating Pond Dam	MA02007	City of Springfield	Non-functional power		Significant

⁵ It is difficult to track down accurate records of dams, as ownership and exact location is not clear. Furthermore, many very old dams listed in DCR records are not in existence anymore, according to local knowledge. This list is compiled from a combination of sources, and then verified by the Committee.

Mill Pond Dam	MA00575	City of Springfield	Recreation	Good/ 8-24-87	Low
Van Horn Park Upper Dam	MA00574	City of Springfield	Recreation	Poor/ 11-12-98	Low
Forest Park Lower Pond Dam	MA02357	City of Springfield	Recreation	Good	Non-jurisdictional
Monsanto Chemical Co. Lower Dam	MA2006	Solutia, Inc	Access Road	Good	Non-jurisdictional

Extent

The Massachusetts Department of Conservation and Recreation (MA DCR) was the agency responsible for regulating dams in the state (M.G.L. Chapter 253, Section 44 and the implementing regulations 302 CMR 10.00). Until 2002, DCR was also responsible for conducting dam inspections but then state law was changed to place the responsibility and cost for inspections on the owners of the dams. This means that individual dam owners are now responsible for conducting inspections.

The state has three hazard classifications for dams:

- High Hazard: Dams located where failure or improper operation will likely cause loss of life and serious damage to homes, industrial or commercial facilities, important public utilities, main highways, or railroads.
- Significant Hazard: Dams located where failure or improper operation may cause loss of life and damage to homes, industrial or commercial facilities, secondary highways or railroads or cause interruption of use or service of relatively important facilities.
- Low Hazard: Dams located where failure or improper operation may cause minimal property damage to others. Loss of life is not expected.

The inspection schedule for dams is as follows:

- Low Hazard dams – 10 years
- Significant Hazard dams – 5 years
- High Hazard dams – 2 years

The time intervals represent the maximum time between inspections. More frequent inspections may be performed at the discretion of the state. Dams and reservoirs licensed and subject to inspection by the Federal Energy Regulatory Commission (FERC) are excluded from the provisions of the state regulations provided that all FERC-approved periodic inspection reports are provided to the DCR. All other dams are subject to the regulations unless exempted in writing by DCR.

There are several small dams along the City’s streams and rivers, but a thorough review of the dam inundation zones for these properties (conducted for the City’s CEM Plan) indicated that there was little risk of damage to life and property from these structures. While these structures pose little risk, the Quabbin Reservoir Dams and the Cobble Mountain Dam pose a significant risk to the City.

The Quabbin Reservoir's Primary Dam is 170 feet high and holds back 415 billion gallons of water. This structure is located to the east along the Belchertown and Ware town boundaries. A breach of this dam would take 8 hours for the maximum damage to the City to be realized, during which the water levels of the Connecticut and Chicopee Rivers would crest 60 feet above their normal peaks; backwash into the North Branch and Mill Rivers would also result on severe local flooding. For a 48-hour period, the City would be divided into four isolated sections and once the flood waters receded, the extent and scope of the devastation would be nothing other than catastrophic. The Massachusetts Water Resources Authority owns these dams and is responsible for maintenance and inspections.

The Cobble Mountain Reservoir Dam is located to the West in the Town of Russell. The failure of this dam would result in significant flooding of the Connecticut River. The Connecticut's water levels would rise 43 above normal levels in eight hours, and significant portions of the City would be under water. The Springfield Water and Sewer Commission owns this dam and is responsible for maintaining it.

Consolidated Edison Energy owns a dam in Indian Orchard at the Indian Orchard power substation along the Chicopee River. Failure of this would cause damage to a trailer park located on Grochmall Avenue and to the Solutia (formerly Monsanto) industrial complex. The trailer park's location gives residents less than 30 minutes to evacuate their homes safely.

However, both the Watershops Pond Dam and the Van Horn Park Lower Dam are considered high risks and have the potential for serious damage. Therefore, a vulnerability assessment was done for the inundation area below these two high risk dams.

Probability of Future Events

Based upon the past events, it is reasonable to say that there is a low frequency of dam failure in Springfield.

Drought – Low Risk

Drought is a normal, recurrent feature of climate. It occurs almost everywhere, although its features vary from region to region. In the most general sense, drought originates from a deficiency of precipitation over an extended period of time, resulting in a water shortage for some activity, group, or environmental sector.

Reduced crop, rangeland, and forest productivity; increased fire hazard; reduced water levels; increased livestock and wildlife mortality rates; and damage to wildlife and fish habitat are a few examples of the direct impacts of drought. Of course, these impacts can have far-reaching effects throughout the region and even the country.

Location

A drought would affect all of Westfield.

Extent

When evaluating the region's risk for drought on a national level, utilizing a measure called the Palmer Drought Severity Index, Massachusetts is historically in the lowest percentile for severity and risk of drought. Even so, there have been several years of drought-like conditions in Western Massachusetts: 1940-1952, 1980-1983, and 1995-2001. Furthermore, global warming and climate change may have an effect on drought risk in the region. With the projected temperature increases, some scientists think that the global hydrological cycle will also intensify. This would cause, among other effects, the potential for more severe, longer-lasting droughts. Additionally, even minor droughts will increase the risk of wildfire, especially in areas of high recreational use.

Previous Occurrences

In Massachusetts, six major droughts have occurred statewide since 1930. They range in severity and length, from three to eight years. In many of these droughts, water-supply systems were found to be inadequate. Water was piped in to urban areas, and water-supply systems were modified to permit withdrawals at lower water levels.

Springfield has had limited experience with severe drought conditions. The city has not experienced a threat to its water supply, and doesn't anticipate any severe water shortages throughout the city.

Probability of Future Occurrences

Springfield's water supply system was designed to accommodate a much larger population, so there is little historical evidence of water shortages in Springfield. The city's two reservoirs, Cobble Mountain and Littleville Reservoir, have a combined daily DEP permitted daily safe yield of 79.1 million gallons per day and the average daily withdrawal is roughly 36 million gallons per day. There have been no documented water shortages and the City's Comprehensive Emergency Management Plan identifies the loss of water as a low risk for Springfield.

Man-Made Hazards – Hazardous Materials – Medium Risk

Hazardous materials are chemical substances, which if released or misused can pose a threat to the environment or health. These chemicals come in the form of explosives, flammable and combustible substances, poisons, and radioactive materials. Hazardous materials in various forms can cause death, serious injury, long-lasting health effects, and damage to buildings, homes, and other property. Many products containing hazardous chemicals are used and stored in homes and businesses routinely. These products are also shipped daily on the nation's highways, railroads, waterways, and pipelines.

The Toxics Release Inventory (TRI), a publicly available EPA database that contains information on specific toxic chemical releases and other waste management activities reported annually by certain covered industry groups as well as federal facilities.

Due to the development patterns of the city—residential growth radiated outwards from employment centers as the city grew—a large portion of the city's neighborhoods

have evolved in and around industrial centers. This makes the risk from chemical releases significantly greater, due to the immediate impact this can have on large populations.

Springfield relies on its HazMat team for responding to incidents involving hazardous materials through a mutual aid agreement.

Location

According to TRI, there are 30 industries currently releasing hazardous materials within Springfield's city limits. In addition, there are 110 sites in the city considered Tier II Hazardous Materials storage facilities, 12 of which are also included in TRI. All 128 sites are included on the Past & Potential Hazards/Critical Facilities Map (Appendix C).

In addition, varying quantities of hazardous materials are manufactured, used, or stored at an estimated 4.5 million facilities in the United States--from major industrial plants to local dry cleaning establishments or gardening supply stores. These hazardous materials are transported regularly over our highways and by rail and if released can spread quickly to any community. Incidents can occur at any time without warning. Human error is the probable cause of most transportation incidents and associated consequences involving the release of hazardous materials.

Extent

The extent of hazardous chemical release is not predictable as it is dependent on the location including whether it is from a stationary or moving source, amount and type of chemical released, and weather conditions at the time of the release, but given the range of chemicals present in Westfield the extent could range from limited to critical.

Previous Occurrences

The City of Springfield has had a high level of chemical spills and toxic events for the past several decades. Springfield's history as an industrial city has resulted in a high concentration of businesses and abandoned sites that contain hazardous chemicals. In addition to this, the ribbon of railways and roadways that weave across the city carries industrial freight that oftentimes contains hazardous chemicals. The rail network is a major connecting route between Boston and Chicago, and between Quebec and New York City. There are also two major petroleum pipes in the City that serve wholesalers and distributors. Finally, there are over 150 Tier II facilities reporting in Springfield, and 23 of those are listed as facilities that manage extremely hazardous substances.

The convergence of several factors has led to a series of accidents in Springfield. In 1984, a release of fuming nitric acid forced the evacuation of 10,000 people from their homes and businesses in a period of 12 hours. In 1986, two releases of fuming nitric acid caused the evacuation of 5,000 people for a period of eight hours *plus* the evacuation of 1,000 more people which led to the shutdown of all interstate and rail lines for the same amount of time. In 1988, a chlorine release from a warehouse forced the evacuation of more than 50,000 people for three days. In 1991, an accident with a

truck carrying nuclear fuel rods on I-91 the closure of the interstate and the City's central business district for 14 hours. In 1993, a truck leaked hydrochloric acid in several portions of the city as it drove until emergency personnel stopped it. In 2002, a leak of 5,000 pounds of anhydrous ammonia placed the city at risk for 24 hours.

Probability of Future Events

On average, there is one event per week in Springfield, but most of these events are related to small-scale releases of petroleum and the likelihood of a catastrophic release is very low.

4: CRITICAL FACILITIES

A Critical Facility is defined as a building, structure, or location which:

- Is vital to the hazard response effort;
- Maintains an existing level of protection from hazards for the community;
- Would create a secondary disaster if a hazard were to impact it.

Critical Facilities within Hazard Areas

Hazards identified in this plan are regional risks and, as such, all critical facilities fall into the hazard area. The exception to this is flooding. There are several critical facilities that fall within the 100-year floodplain as shown in the table at the end of this section.

The Critical Facilities List for the City of Springfield has been identified utilizing a Critical Facilities List provided by the State Hazard Mitigation Officer. Springfield's Hazard Mitigation Committee has broken up this list of facilities into four categories:

- The first category contains facilities needed for Emergency Response in the event of a disaster.
- The second category contains Non-Emergency Response Facilities that have been identified by the Committee as non-essential. These are not required in an emergency response event, but are considered essential for the everyday operation of Springfield.
- The third category contains Facilities/Populations that the Committee wishes to protect in the event of a disaster.
- The fourth category contains Potential Resources, which can provide services or supplies in the event of a disaster.

The critical facilities and evacuation routes potentially affected by hazard areas are identified in Table 4-1, following this list. The Past and Potential Hazards/Critical Facilities Map (Appendix C) identifies these facilities.

Category 1 – Emergency Response Services

The City has identified the Emergency Response Facilities and Services as the highest priority in regards to protection from natural and man-made hazards.

- 1) Emergency Operations Center
Primary: Fire Department Alarm & Repair- 1535 Roosevelt Av.
Secondary: Springfield Police Dept- 130 Pearl St.

- 2) Fire Station
 - Fire Chief's Office - 605 Worthington St
 - Fire Dept-Arson Squad - 1212 Carew St
 - Fire Dept-Public Relations - 605 Worthington St
 - Fire Inspections & Permits - 605 Worthington St
 - Springfield Fire - 173 Oakland St
 - Springfield Fire Dept - 1049 Sumner Ave
 - Springfield Fire Dept - 1535 Roosevelt Ave
- 3) Police Station
 - 130 Pearl Street
- 4) Highway Department
 - 70 Tapley Street
- 5) Water
 - Bondi's Island in Agawam
- 6) Emergency Fuel Stations
 - Department of Public Works – 70 Tapley Street, Springfield
- 7) Emergency Electrical Power Facility
 - Raymond Sullivan Public Safety Complex – 1212 Carew Street
- 8) Emergency Shelters
 - Central High School
 - Commerce High School
 - Kiley Jr. High School
 - New North School
 - Van Sickle Jr. High School
- 9) Water Sources
 - Numerous locations in Springfield, any available.
- 10) Transfer Station/Waste Management
 - Bottle and Can Return – 611 Main Street
- 11) Helicopter Landing Sites
 - Massachusetts State Police Springfield Barracks – Armory Street
 - Mercy Medical Center – Stafford Street
 - Baystate Medical Center – Chestnut Street
 - MassMutual Insurance Company – State Street
- 12) Communications
 - 1500 Main Street
 - 22 Birnie Avenue
 - 101 West Street
 - 1212 Carew Street

440 Tiffany Street
99 Arnold Avenue
224 Hancock Street
556-562 Saint James Avenue
1414 State Street
2025 Roosevelt Avenue
101 West Street
230 Verge Street
Bound By Main Street, Vernon Street, East Cumberland Street & Pynchon

13) Primary Evacuation Routes

Main Street – Indian Orchard
Main Street – Downtown Springfield
Plainfield Street
Route 141 (Worcester Street)
Route 21
Route 143
Route 291
Route 5
Route 83

14) Bridges/Culverts Located on Evacuation Routes

20 Park Avenue – Connecticut River
Allen Street – Mill River
Allen Street – Raceway
Belmont Avenue – Mill River
Flint Street – Mill River
Fox Road – Mill River
Hancock Street – Mill River
Intersate 91 – Water Mill River
Mill Street-Mill River
NBR Parkway – Mill River
Roosevelt Avenue – Watershops Pond
Sunrise Terrace – Mill River

Category 2 – Non Emergency Response Facilities

The City has identified these facilities as non-emergency facilities; however, they are considered essential for the everyday operation of Springfield.

1) Problem Culverts

Abbe Brook
Acorn Street drainage ditch and culvert
Dickinson Street – towards Porter Lake Drive
North Brook culvert
Poor Brook drainage ditch

Roy Street drainage ditch and culvert
Senator Street drainage ditch and culvert
Worcester Street near Bircham Road
Several drainage areas around Forest Park into the Porter Lake system

Category 3 – Facilities/Populations to Protect

The third category contains people and facilities that need to be protected in event of a disaster.

- 1) Special Needs Population/ Elderly Housing/Assisted Living
 - 2-90 Barney St. 4-102 Trafion St.
 - 603 Berkshire Ave. - 45
 - 63-67 Florida St. Not In Use
 - Bay State Place - 414 Chestnut St.
 - Baystate Ambulatory Care Center **(Emergency Power)** 3300 Main St.
 - Baystate Med Ctr - 759 Chestnut St.
 - Baystate Med Ctr (South Campus) - 140 High St. **(Emergency Power)**
 - Beech Manor Rest Hom 38 Warner St **(Emergency Power)**
 - Blue Spruce Rest Hom 175 Bowdwin St.
 - Carpe Diem Apts. - 1228 Carew St.
 - Central Apartments - 347-367 Central St.
 - Chateau Apts. 5 Temple St. - -
 - Chestnut Park 115-185 Dwight St.
 - Christopher Ct Apts 1118-1122 St. Ames Av
 - City Wide Assocs. - 11 Achushnut Ave.
 - Forest Park Manor 472 Dickinson St
 - Gentile Apartments - 85 Williams St.
 - Hampden House Rest 190 Kendall St.
 - Harrigan Apartments - 107 Belmont St.
 - Highland House - 250 Oak Grove Av.
 - Hobby Club Housing - 307 Chestnut St.
 - Hogan Apts 138- St James Av
 - Hunter Place Apts - 69 Andrew St.
 - Independence House 1475 Roosevelt Av
 - Indian Orchard Manor - 1-57 Milton Ct.
 - Johnny Appleseed - 500 Hancock St.
 - Kathryn Jones Apts. - 35-49 Pendleton Av
 - Kendall Commons - 200 Kendall St.
 - Keystone Woods (Under Construction) 942 Grayson Dr -
 - Linden Towers - 310 Stafford St.
 - Maple Hill Rest Home - 156 Mill St. **(Emergency Power)**
 - Marbetton-Wendall Apts - 549 Main St.
 - Mercy Hospital 271 Carew St. **(Emergency Power & Self Contained Ventilation)**
 - Morgan Apartments 31-51 Morgan St.-
 - Morris St. Sch Apts - 45 Dewey St.

Myrtle St. Sch Apts 64 Myrtle St. I.O.
Park View Specialty Hospital - 1400 State St. **(Emergency Power)**
Pine Manor Nursing H 1190 Liberty St.
Primus Mason Manor - 74 Walnut St. **(Emergency Power)**
Providence.Care Center Of Spfld - 370 Pine St.
Reed's Landing - 807 Wilbraham Rd.
Ring Health Care Ctr - 215 Bicentennial Hy **(Emergency Power)**
Ring Health Care Ctr - 22 Ridgewood Place **(Emergency Power)**
Riverview Towers - 134 Sanderson St
Shriners Hospital - 516 Carew St. **(Emergency Power)**
Spruce Manor (Vacant) - 388 Central St. **(Emergency Power)**
St. James Manor - 744 St. James Av.
Tri-Towers - 35 Saab Court

Day Care Centers / Group Homes / Community Centers

Academy Head Start - 1190 Liberty St
Acorn Learning- 62 Noel St
Acres Pre-School & Kindergarten - 850 Parker St
Anne McTier House - 20-6 Wilbraham Av
Armory Sq. Day Care -1 Armory Sq-STCC
Association for Community Living - 1 Carando Dr.
Bergin Head Start - 15 Girard Av.
Boland Head Start - 426 Armory St
Brighter Future Child Care - 83 Main St. I.O.
Brooks Children's House - 99 Revere St
Camp Angelina - 1252 S. Branch Pkwy.
Carew Street Head Start - 65 Carew St
Center for Human Development- 127 Orange St
Center for Mental Health - 503 State St(operates under Center for Human Development)
Champion Child Care - 30 Bowdoin St
Child Care Service
Children & Family Center of New north Citizens' Council - 2455 Main St
Children's Center at Mason Wright- 74 Walnut St
Children's Creative Center - 170 Edendale St.
Children's Creative Ctr. - 29 Logan St.
Children's Corner - 177 1/2 Hancock St
Children's Corner Day Care - 240 Walnut St
Children's House - 24 Chapin Terr
Children's House -720 Wilbraham Rd.
Children's Study Home - 44 Sherman St
Clarendon Fam Day Care - 774 State St.
Clinton Nur School & Kindergarten 1590 Sumner Ave.
Community Care -40 Sierra Vista Rd
Community Care Center - 69 Sunrise (residence program)
Community Enterprises - 57 Pineywood Av. -
Community Enterprises Main Office - 1985 Main St.

Ctr for Human Dev - 25 27 Bonnyview St
 Dunbar Community Center -33 Oak St.
 Early Child Ctr - 15 Catharine St
 Early Childhood Center of Greater Springfield 15 Catharine St
 Early Childhood Center - 143 Eastern Ave.
 Eastern Avenue Head Start - 162 Eastern Ave.
 El Instituto De La Familia Community Care - 549 Chestnut St
 ETHOS Alcohol Treatment 56 Temple St
 Exper w/Travel - 85-87 White St
 Forest Park Head Start - Alderman St
 Foster Memorial Nursing Home - 36 Puritan Rd.
 Gandara Mental Health Center - 2155 Main St
 Gandara Mental Health Ctr (old - W W Johnson Life Ctr)- 736 State St
 Gandara Recovery House - 33 Arch St
 Gerena Head Start - 200 Birnie Ave
 Giggle Garden's Child Care- 469 Tiffany St.
 Giggle Gardens - 1400 State St
 Grey House Center- 22 Sheldon St
 Hampden County Program - 54 Manhattan St
 Hampden Cty Assn for Comm Living- 1230 Plumtree Rd.
 HCS Headstart - 33 Wilbraham Av.
 Hilltop Services -210-212 Centre St.
 Hilltop Services -55 Blanding St
 Horizons House 764 Alden St
 I O Citizen's Council - 117 Main St. I.O.
 Intensive Residential Prog - 80 Glenvale St
 Jacqueline's Children's house - 403 Orange St.
 Jewish Comm Ctr 1160 Dickinson St
 Jolly Juniors Child Care Center - 50 Massachusetts Av
 Key Program - 156 Arnold Ave.
 Key Program - 576 State St.
 Key Program - 786 Wilbraham Rd.
 Key Program -20 Parkwood St.
 Kid Stop at Brunton -1801 Parker St
 Kid Stop at Glickman - 120 Ashland St
 Kid Stop at Sumner - 45 Sumner Av. -
 Kid Stop at Zanetti - 59 Howard St
 Kiddie Kollege - 797 State St.
 Kim center Adult Day Care- 604 Cottage St
 Kinder Care Learning -201 Cooley St.
 Laragione Rehab Center - 163 Westminister St
 Laragione Rehab Center - 166 Westminister St
 Laragione Rehab Center - 186 St. James Ave
 Laragione Rehab Center - 187 Westminister St
 Laragione Rehab Center - 204 St. James Ave
 Laragione Rehab Center (main) - 179 St. James Ave
 Li'l Branches - 94 Anniversary St
 Liberty Extended Day Program - 5 Nursery St

Loaves and Fishes Soup Kitchen - 287 State St.
Make Way for Ducklgs - 761 Sumner Ave.
Marathon House - 5 Madison Ave. -
Mason Sq Community Center - 756 State St.
Mason Square Head Start - 30 Madison Ave.
Mayflower Senior Ctr - 80 Arvilla St
Mental Health Assn - 15 Pratt St
Mental Health Assn - 52 Avon Place -
Mental Health Assn -110 Lloyd Ave.
Mental Health Assoc - 65 Price St
Michele's Kids Care -700 Parker St
Mini and Winnie Day Care - 17 John St
Montess Sch of Spfld - 1644 Allen St
Montessori-Pioneer Valley - 1524 Parker St
Moxon Early Childhood Center- 20 LaFrance St. I O
Muhammad's Learning Center. - 187 Main St. I.O.
Multi-Cultural Services - 27 Brittany Rd.
Multi-Cultural Services - 294-296 Oak St I O
My Sister's House- 89 Belmont Ave.
New Beginnings Child Care - 721 State St.
New North Citizen's Council Daycare2383 Main St
North End Com Center - 2383 Main St
Open Pantry - 95 Jefferson Ave.
Open Pantry Shelter - 68 70 Calhoun St
Opportunity House - 59 St. James Av
Opportunity House- 61 St. James Ave
Orchard Children's Corner - 459 Main St. I.O.
Potter's House- 92 Clifton Ave
Prospect House 103 Prospect St
Robins Playful Panda- 34 Westminster St.
Salvation Army - 170 Pearl St
Salvation Army - 285 Liberty St.
Sch Dept Pre-School Program - 455 Island Pond Rd
Small Wonders Child Care - 58 Marlborough St.
South End Com Ctr - 29 Howard St.
Springfield Day Nursery155 Chestnut St
Springfield Golden Age Club - 45 East Court St.
Springfield Rescue Mission - 19 Bliss St
Springfield Boys Club - 481 Carew St.
Springfield Day Nursery - 255 King St
Springfield Day Nursery- 55 State St -
Springfield Day Nursery- 52 Sumner Ave.
Springfield Girls Club PEP - 100 Acorn St
St Lukes Rest/Women - 85 Spring St
Sullivan Head Start- 160 Nursery St
Sunshine Nursery and Daycare1- 50 Quincy St.
The Kid's Place - 594 Cottage St.
Three Rivers Program - Ridgewood Terrace

Trinity Nursery School - 361 Sumner Ave.
Worthington House 769 Worthington St
Y.M.C.A. - 275 Chestnut St

2) Public Buildings/Areas

(Armory St. – I-291 Circle)
16 Acres Fire Sta - 1265 Parker St.
16 Acres Public Lib - 1187 Parker St.
American Convention Svc - 50 Turnbull St
American Red Cross - 506 Cottage St.
AMR Amb. Svc. - 595 Cottage St.
Amtrak Train Stat. - 66 Lyman St.
Ar Reserve Armory - 50 East St.
Armory Museum - 1 Armory Sq.
AT&T Telephone - 351 Bridge St.
Barrows Park Pool - Walnut & Oak Sts
Bask Hall of Fame - 1000 W. Columbus Av
Baystate Gas Co. - 2025 Roosevelt Ave.
BHS Amb Svc - 345 Page Blvd.
Blunt Park Pool - Blunt Park Rd.
Boston Concessions Group - 1277 Main St
Brightwood Library - 359 Plainfield St.
Bus Sta/Peter Pan - 1776 Main St.
Camp Star-Park Dept Physically Handicapped Camp - 1385 Berkshire Ave.
City Hall - 36 Court St.
Civic Center - 1277 Main St.
Conn Valley Mus - 194 State St.
Cyr Arena - Forest Park
DPW Tapley St Facility - 70 Tapley St.
E. Spfld. F.S. - 933 Page Blvd.
E. Spfld. Pub Lib - 21 Osborne Terr.
Federal Bldg. - 1550 Main St.
Fire Alarm Center - 1535 Roosevelt Ave
Fire HQ - 605 Worthington St.(EMERGENCY POWER)
Fire Training Ctr - 100 Grochmal Ave.
Forest Park Pool - Forest Park
Forest Park Pub Lib - 380 Belmont Ave.
Franconia Golf Course (Seasonal) 619 Dwight Rd.
Greenleaf Ctr - 1189 Parker St.
GWV Smith Art Mus - 222 State St.
Hampden County Sherif Day Reporting Ctr - 311 State St..
Hampden Cty Ct House - 50 State St.
I.O. Fire Station - 15 Odessa St.
I.O. Pub Library - 44 Oak St., I.O.
Liberty Pub Lib. - 773 Liberty St.
Ma Dept Youth Ser - 280 Tinkham Rd.
Mason Sq. F.S. 33 Eastern Ave. (EMERGENCY POWER)
Mason Square Lib. - 765 State St.

Mass Mutual Ctr - 1277 Main St
Massreco Fire Sta - 16 Massreco St.
Museum of Fine Art - 49 Chestnut St.
Museum of Science - 236 State St.
Nat Guard Arm - 1505 Roosevelt Ave
North End Fire Sta - 2729 Main St. (EMERGENCY POWER)
Oakland St. F.S. - 173 Oakland St.
Old Water Dept. Yard - 71 Colton St.
operates PVTA, PVTA located at 2808 Main St.)
Park Dept. Admin - Forest Park Park Rangers
Pine Point Pub Lib - 204 Boston Rd.
Police HQ - 130 Pearl St. (EMERGENCY POWER)
Purchasing Dept. - 233 Allen St.
Quadrangel Complex City Library- 220 State St.
R Sullivan Public Safety - 1212 Carew St.
Reg of Motor Veh - 164 Liberty St.
School Dept. - 195 State St.
School Time Transportation, Inc - 99 Arnold Av.
Smead Skating Rink - 1780 Roosevelt Ave
Spfld. Area Transit Co., Inc. (SATCO) 2840 Main St.
State Office Bldg. - 436 Dwight St.
State Police - 600 Liberty St.
Sumner Ave. F.S. - 1043 Sumner Ave
U.S. Bulk Mail Ctr - 190 Fiberloid Ave
Us Post Office - 1149 Main St
Us Post Office - 1500 Main St
Us Post Office - 1883 Main St
Us Post Office - 19 Oak St
Us Post Office - 190 Fiberloid St
Us Post Office - 3065 Main St
Us Post Office - 393 Belmont Ave
Us Post Office - 914 State St
US Sprint - 400 Taylor St.
US Water (Bondi Island Plant) - In City of Agawam
Veterans Golf Crse - 1059 S. Branch Pkwy
West. Mass Electric - 300 Cadwell Dr.
Western Mass Kidney Center 2000 Main St.
WMass Corr Alcoh Ctr - 26 Howard St.
Zoo In Forest Park - 1 Pecousic St

3) Schools

Academy Hill School - 1190 Liberty Street
Alfred G Zanetti Elementary School - 59 Howard St
Alfred Glickman Elementary School - 120 Ashland Ave
Alice Beal Elementary School - 285 Tiffany St
Arthur Talmadge Elementary School - 1395 Allen St
Brightwood Elementary School - 471 Plainfield St
Cathedral High School - 260 Surrey Rd

Chestnut Accelerated Middle School - 355 Plainfield St
Curtis Blake Day School - 979 Dickinson St
Daniel Brunton Elementary School - 1801 Parker St
Edward Boland Elementary School - 426 Armory St
Elias Brookings Middle School - 367 Hancock St
Forest Park Middle School - 46 Oakland St
Frank H Freedman Elementary School - 90 Cherokee Dr
Frederick Harris Elementary School - 58 Hartford Ter
Gates Expeditionary Learning School - 1170 Carew St
German Gerena Community School - 200 Birnie Ave
Glenwood Elementary School - 50 Morison Ter
High School Of Commerce - 415 State St
Hiram Dorman Elementary School - 20 Lydia St
Holy Cross School - 153 Eddywood St
Holy Name School - 37 Alderman St
Homer Street Elementary School - 43 Homer St
Horace Mann New Leadership Cs - 180 Ashland Ave
John Duggan Middle School - 1015 Wilbraham Rd
John F Kennedy Middle School - 1385 Berkshire Ave
Kathleen Thornton School - 44 Sherman St
Kensington Avenue Elementary School - 31 Kensington Ave
Liberty Elementary School - 962 Carew St
Lincoln Elementary School - 732 Chestnut St
M Marcus Kiley Middle School - 180 Cooley St
Macduffie School - 1 Ames Hill Dr
Margaret C Ells Elementary School - 319 Cortland St
Martin Luther King Chart School - 649 State St
Mary A Dryden Veterans Memorial School - 190 Surrey Rd
Mary Lynch Elementary School - 315 N Branch Pkwy
Mary O Pottenger Elementary School - 1435 Carew St
Mary Walsh Elementary School - 50 Empress Ct,
Mill Pond School - 91 Old Acre Rd
Milton Bradley Elementary School - 22 Mulberry St
Our Lady Of Hope School - 474 Armory St
Our Lady Of Mount Carmel - 36 Margaret St
Our Lady Of The Sacred Heart - 52 Rosewell St
Pioneer Valley Chrn School - 965 Plumtree Rd
Pioneer Valley Montessori School - 1524 Parker St
Rebecca Johnson Elementary School - 55 Catherine St
Robert M Hughes Charter School - 90 School St
Roger L Putnam Vocational Tech High School - 1300 State St
Sabis International Charter School - 160 Joan St
Safe - Berkshire St Campus - 90 Berkshire St
Safe - Eastern Avenue Campus - 118 Alden St
Safe - Recovery School - 334 Franklin St
Safe - Wilbraham Ave Campus - 140 Wilbraham Ave
Samuel Bowles Elementary School - 24 Bowles Park
Springfield Central High School - 1840 Roosevelt Ave

Springfield High School Science & Tech - 1250 State St
Sumner Avenue Elementary School - 45 Sumner Ave
Thomas Balliet Elementary School - 111 Seymour Ave
Van Sickle Middle School - 1170 Carew St
Warner Elementary School - 493 Parker St
Washington Elementary School - 141 Washington St
White Street Elementary School - 300 White St
William Deberry Elementary School - 670 Union St

Several private daycares throughout the city – see Past & Potential Hazards/Critical Facilities Map

4) Religious Buildings

Churches

Acres Congregation-Jehovah - 1680 Wilbraham Rd
Alden Baptist Church - 649 State St
All Nations Church Of God - 67 Kenyon St
Alpha & Omega Ministry - 2755 Main St
Apostolic Church - 34 Catharine St
Bethel African Methodist - 27 Pendleton Ave
Bethesda Ev Lutheran Church - 455 Island Pond Rd
Blessed Hope Advent Christian - 1516 Sumner Ave
Blessed Sacrement - 445 Plainfield St
Canaan Baptist Church-Christ - 42 Hobart St
Canaan Baptist Church-Christ - 1430 Carew St
Celestial Praise Church Of God - 321 Wilbraham Rd
Christ Church Cathedral - 35 Chestnut St
Christ Presbyterian Church - 1597 Allen St
Christadelphian Chapel - 710 White St
Christian Embassy Church - 30 Bowdoin St
Christian Hill Baptist Church - 54 Bowdoin St
Christian Hope Ministry - 1657 Main St
Christian Life Ctr - 1590 Sumner Ave
Church In The Acres Baptist - 1383 Wilbraham Rd
Church Of God - 135 Hancock St
Church Of Jesus Christ Of Lds - 376 Maple St
Church Of The Nazarene - 961 Wilbraham Rd
Citylights Ministry - 4 Garfield St
Daniel's New Bethel Church - 1321 Dwight St
Diocese Of Springfield - 65 Elliot St
Diocese-Western Mass-Episcopal - 37 Chestnut St
Dr Elouise Franklin Church Inc - 104 Hancock St
East Church Congregational - 455 Island Pond Rd
Ebenezer Missionary Baptist - 44 Dearborn St
Faith United Church - 52 Sumner Ave
Family Church - 245 Bay St
First Korean Church-Nazarene - 212 Cottage St

First Park Memorial Baptist - 1 Garfield St
First Spiritualist Church - 33 Bliss St
Foster Memorial Church - 1234 Parker St
Freedom House Of God Church - 563 Union St
Friendship Baptist Church - 68 Church St
Fuentes De Salvacion - 803 Liberty St
Gardner Memorial Ame Zion - 90 Carew St
Gethsemane Chr Of Jesus Christ - 47 Harvey St
Glorious Gospel Church - 627 State St
Grace Baptist Church - 60 Bowles Park
Grace Church Of Christ - 336 Springfield St
Harvest Fellowship Church - 761 Sumner Ave
Heritage Baptist Church - 640 Plumtree Rd
Holiness Church Of God Seventh - 398 Hancock St
Holy Cross Catholic Church - 221 Plumtree Rd
Holy Name Rectory - 323 Dickinson St
Holy Temple Church Of God - 145 Bay St
Holy Trinity Church Of God - 57 Bay St
House Of Prayer Apostolic - 116 Walnut St
Iglesia Bautista Hispana - 18 Salem St
Iglesia Bautista Sinai - 134 Abbe Ave
Iglesia Cristina Senda Antiqua - 372 Walnut St
Iglesia De Dios Elsiloe Inc - 17 Morgan St
Iglesia De Dios Pentecostal - 72 Orchard St
Iglesia Fe Victoriosa Inc - 700 Berkshire Ave
Iglesia Penpecostal Fente De - 6 Talcott St
Iglesia Vision Misionera Voz - 744 Main St
J C Williams Community Ctr - 116 Florence St
Jehovah's Witnesses - 131 Clifton Ave
Jehovah's Witnesses - 21 Sanderson St
Jehovah's Witnesses - 187 Stuart St
Latino Ministry Movement Juan - 254 Bridge St
Librerria Christiana Fuente De - 346 Orange St
Macedonia Church-God In - 201 King St
Martin Luther King Jr Church - 14 Concord Ter
Mass Holy Assembly Church-All - 43 Homer St
Morning Star Church - 88 Lawton St
Mt Calvary Baptist Church - 17 John St
Mt Calvery Baptist Church - 981 Wilbraham Rd
Mt Zion Baptist Church - 368 Bay St
New Creation Discipleship - 893 Boston Rd
New England District Lutheran - 400 Wilbraham Rd
New Generation Christian Chr - 605 Liberty St
New Hope Pentecostal - 364 Central St
New Jerusalem Chr-God & Christ - 209 Quincy St
Oasis Ministries Intl Church - 121 Chestnut St
Old First Church - 50 Elm St
Our Lady Of Hope Church - 577 Carew St

Our Lady Of Rosary Parish Hall - 334 Franklin St
Our Lady Of The Rosary Parish - 334 Franklin St
Our Lady-The Sacred Heart - 417 Boston Rd
Pentecostal Bethel Church - 8 Cass St
Pentecostal Church Of God - 74 Oak St
Pentecostal Church Of God - 25 Terrence St
Potter's House Pentecostal Chr - 761 Sumner Ave
Power International - 1655 Main St # 302
Praise & Glory Church - 145 State St
Progressive Community Baptist - 599 State St
Revival Time Evangelistic Ctr - 132 Florence St
Sacred Heart Church - 395 Chestnut St
Salvation Army - 170 Pearl St
Seventh Day Adventist Church - 1118 Sumner Ave
Shepherd's Gate Christian - 336 Springfield St
Shiloh Church - 91 Jasper St
Shiloh Freewill Baptist Church - 26 Burr St
Shiloh Seventh Day Adventist - 797 State St
Solid Rock Community Baptist - 821 Liberty St
South Congregational Church - 45 Maple St
Spanish Christian Church - 565 Chestnut St
Spanish Christian Church Ed - 549 Chestnut St
Spring Of Hope Church Of God - 35 Alden St
Springfield Hispanic Seventh - 124 Putnam Cir
Springfield Presbyterian Chr - 18 Spencer St
Springfield Wesleyan Church - 82 White St
St Barnabas & All Saints Chr - 41 Oakland St
St Catherine Of Siena Parish - 1023 Parker St
St Francis Of Assisi Chapel - 254 Bridge St
St George Greek Orthodox Chr - 22 Saint George Rd
St John's Congregational Chr - 643 Union St
St Joseph Parish - Po Box 70666
St Luke's Episcopal Church - 961 Saint James Ave
St Mark Armenian Church - 2427 Wilbraham Rd
St Mark's Cme Church - 64 Dresden St
St Mary's Church - 840 Page Blvd
St Michaels Catholic Cathedral - 260 State St
St Patrick's Church - 1900 Allen St
St Pauls Rc Church - 235 Dwight Rd
St Peter & St Paul Russian Chr - 118 Carew St
St Peter's Episcopal Church - 45 Buckingham St
St Rachel's Holiness Church - 171 Eastern Ave
Strait To Heaven Church - 2 Orange St
Temple Of Praise - 433 Eastern Ave
Third Baptist Church - 149 Walnut St
Trinity Lutheran Church - 400 Wilbraham Rd
Trinity United Methodist Chr - 361 Sumner Ave
True Vine Church - 140 Andrew St

Union Church - 91 Jasper St
United House Of Prayer - 331 Wilbraham Rd
Unity In Christ Deliverance - 45 Dearborn St
Wachogue Congregational Church - 80 Arvilla St
Wesley United Methodist Church - 741 State St
Whole Truth Temple - 8 Norfolk St
Word Of Life Church - 282 White St
Zion Community Baptist Church - 1140 Roosevelt Ave

Synagogues

Beth El Temple - 979 Dickinson St
Kesser Israel Synagogue - 19 Oakland St
Kodimoh Synagogue - 124 Sumner Ave
Sinai Temple-Reform - 1100 Dickinson St

Mosque

Al Baqi Islamic Ctr - 495 Union St

5) Historic Buildings/Sites

Apremont Triangle Historic District - Jct. Pearl, Hillman, Bridge, and Chestnut
Bangs Block - 1119 Main St.
Baystate Corset Block - 395-405 Dwight St. and 99 Taylor St.
Belle and Franklin Streets Historic District - 77--103 Belle St. and 240--298 Franklin St.
Bicycle Club Building - 264-270 Worthington St
Burbach Block - 1113-1115 Main St.
Carlton House Block - 9-13 Hampden St.
Chapin National Bank Building - 1675-1677 Main St.
Colonial Block - 1139-55 Main St.
Court Square Historic District - Bounded by Main, State, Broadway, Pynchon Sts.
and City Hall Pl.
Cutler and Porter Block - Also known as 109 Lyman St.
Downtown Springfield Railroad District - Roughly bounded by Lyman, Main,
Murray, and Spring Sts.
Driscoll's Block - 211-13 Worthington St.
Edisonia Theater Block - 1156--1176 Main St.
Ethel Apartment House - 70 Patton St
First Church of Christ, Congregational - 50 Elm St.
Fitzgerald's Stearns Square Block - 300-308 Bridge St.
Forest Park Heights Historic District - Off MA 21
French Congregational Church - 33-37 Bliss St.
Fuller Block - 1531-1545 Main St.
Guenther & Handel's Block - 7--9 Stockbridge St.
Gunn and Hubbard Blocks - 463-477 State St.
Hampden County Courthouse - Elm St.
Hampden Savings Bank - 665 Main St.
Haynes Hotel Waters Building - 1386-1402 Main St.
Henking Hotel and Cafe - 15-21 Lyman St.

6) Employment Centers

American International College - 1000 State St
Springfield College - 263 Alden St
Western New England College - 1215 Wilbraham Rd
Baystate Health - 280 Chestnut St
Baystate Medical Ctr - 759 Chestnut St
Baystate Medical Ctr Specialty - 140 High St
Hartford Hospital - 80 Seymour Ave
Mercy Medical Ctr - 271 Carew St
Park View Rehab & Nursing Ctr - 1400 State St
Shriner's Hospital - 516 Carew St
Weldon Rehabilitation Hospital - 233 Carew St

Category 4 – Potential Resources

Table 4.1: Critical Facilities and Evacuation Routes Potentially Affected by Hazard Areas

Hazard Type	Hazard Area	Critical Facilities Affected	Evacuation Routes Affected
Flooding			
	Connecticut River Flooding	Baystate Medical Center campus and associated clinics on Main Street	Main Street
		Springfield Housing Authority residences in the Brightwood Section of Springfield along Riverside Road	Plainfield Street
		Western Massachusetts Correctional Alcohol Center on Howard Street	Main Street
		Grochmal Avenue Wastewater Treatment facility	Worcester Street (Route 141)
	Chicopee River Flooding	Grochmal Mobil Home Park	Worcester Street (Route 141)
		Solutia	Worcester Street (Route 141)
		Styrolutia	Worcester Street (Route 141)
		Water Street Section of Indian Orchard	Main Street (Indian Orchard)
Severe Snow/Ice Storm	Citywide Impact	All critical facilities affected	Main Street – Indian Orchard Main Street – Springfield Plainfield Street Route 141 (Worcester Street) Route 143 Route 21 Route 291

			Route 5 Route 83
Hurricane/Severe Wind	Citywide Impact	All critical facilities affected	Main Street – Indian Orchard Main Street – Springfield Plainfield Street Route 141 (Worcester Street) Route 143 Route 21 Route 291 Route 5 Route 83
Wildfire/Brushfire		Baystate Medical Center – Main Campus	Main Street Springfield
		Exxon-Mobile Pipeline Terminal	Albany Street
		FL Roberts Terminal (Buckeye Pipeline)	Albany Street
		LE Belcher Oil Terminal (Buckeye Pipeline)	Tapley Street/Saint James Avenue
		Department of Youth Services Secure Residential Facility	Tinkham Road
Earthquake	Citywide Impact – especially pre-1975 construction		Main Street – Indian Orchard Main Street – Springfield Plainfield Street Route 141 (Worcester Street) Route 143 Route 21 Route 291 Route 5

			Route 83
Dam Failure	Lower Van Horn Dam	Baystate Medical Center campus and associated clinics on Main Street	Main Street
		Baystate Medical Center Main Street campus	Springfield Street Chapin Terrace
		Springfield Housing Authority residences in the Brightwood Section of Springfield along Riverside Road	Plainfield Street
		Grochmal Avenue Wastewater Treatment facility	Worcester Street (Route 141)
	Indian Orchard Dam	Grochmal Mobil Home Park	Worcester Street (Route 141)
		Solutia	Worcester Street (Route 141)
		Styrolutia	Worcester Street (Route 141)
		Water Street section of Indian Orchard	Main Street – Indian Orchard
Drought	Citywide impact	No critical facilities affected	No evacuations required
Hazardous Materials	Exxon Mobile Oil Terminal	CSX Rail Line	CSX Rail Line

(Past & Potential Hazards/Critical Facilities Map Located In Appendix C)

5: MITIGATION STRATEGIES

One of the steps of this Natural Hazard Mitigation Plan is to evaluate all of the city's existing policies and practices related to natural hazards and identify potential gaps in protection. Once these gaps in protection are identified, future mitigation strategies can be crafted and recommended. This is done by evaluating existing and future measures in comparison to the city's goal statement for natural hazard mitigation.

Goal Statement

To minimize the loss of life, damage to property, and the disruption of governmental services and general business activities due to natural disasters. To provide adequate shelter, water, food and basic first aid to displaced residents in the event of a natural disaster and to provide adequate notification and information regarding evacuation procedures, etc., to residents in the event of a natural disaster.

For the extent of this analysis, the Committee reviewed the following City documents:

- Zoning By-Law
- Subdivision Rules and Regulations
- Springfield Open Space and Recreation Plan
- CEM Plan
- Other relevant Guidelines as identified (Fire Department Burn Permit Procedures, Building Code, etc.)

This section of the plan serves to identify current mitigation strategies and recommend future mitigation strategies. This is done both generally, and by hazard type.

General Mitigation Measures

Several of the recommended mitigation measures have multiple benefits because, if implemented, they will mitigate or prevent damages from more than one type of natural hazard. These do not fall under one hazard type, but could be put into place for facilitation of better natural hazard protection generally.

Some of these general hazard-related strategies and measures do not fall specifically under the category of "mitigation," but are instead tools for

What's the CEM Plan?

An important existing general preparedness and response tool is Springfield's Comprehensive Emergency Management Plan (CEM Plan). Although the CEM Plan is focused on the procedural response to an emergency, it organizes information, includes supply and information inventories, and outlines detailed steps for increasing

preparedness. The Hazard Mitigation Planning Committee recognizes that these are also important recommendations for the City, and has included them here:

- Springfield has an active Local Emergency Planning Committee.
- The Springfield Department of Health & Human Services in cooperation with the Pioneer Valley Chapter of the American Red Cross and the Salvation Army has established a system to inventory supplies at existing shelters and developed a needs list and storage requirements.
- The Springfield Office of Emergency Preparedness is examining its current notification system, including the feasibility of a new siren warning system. The City has been using a reverse 911 system (Blackboard) for about five years.
- The Office of Emergency Preparedness and the Department of Health & Human Services hosts a web site and provides community instruction to disseminate information on emergency information, what to include in a "home survival kit", how to prepare homes and other structures to withstand flooding and high winds, and the proper evacuation procedures to follow during a natural disaster.

Flooding

The key factors in flooding are the water capacity of water bodies and waterways, the regulation of waterways by flood control structures, and the preservation of flood storage areas and wetlands. As more land is developed, more flood storage is demanded of the city's water bodies and waterways.

Current Mitigation Measures

The City currently addresses this problem with a variety of mitigation tools and strategies. Flood-related regulations and strategies are included in the City's zoning by-law, subdivision regulations, as well as a proposed stormwater management by-law. Relevant goals are included in the adopted Open Space and Recreation Plan. Infrastructure like dams and culverts are in place to manage the flow of water. These current mitigation strategies are outlined in the following table.

Table 5-1: Existing Flood Hazard Mitigation Measures

Existing Strategy	Description	Effectiveness	Potential Changes
Flood Control Structures	Twelve dams.	Somewhat effective.	Improve or remove high-risk dams.
	Connecticut River Dikes	Very effective for managing floodwaters	Maintenance of dikes to maintain structural integrity.
Culvert Replacement	Island Pond storm water pump station project	Very effective for managing flood control needs.	Prevent localized flooding from high volume storm events
	Abbe Brook bank		

		stabilization project Drainage Culvert Reclamation Project – Alton St., Wilbraham Rd., Industry Ave., Roosevelt Ave., Peekskill Ave.		
Zoning Bylaws	Floodplain District	Overlay district to protect areas delineated as part of the 100-year floodplain and special permit requirements.	Moderately effective for preventing hazardous chemical facilities from entering the floodplain; allows some uses by right and requires a special permit for most hazardous chemical facilities.	Create a table of uses that clarifies which uses are allowed by-right, special permit or not at all; then modify table of uses to prohibit high-risk uses and future construction.
	Special Permit	Applied to those uses that the City of Springfield wants to control, should a proposed project not conform to the needs of a neighborhood.	Somewhat effective for preventing incompatible development.	Consider creating more performance-based evaluations, environmental standards.
	Connecticut Riverfront District	Accommodates and controls development along the riverfront; promotes tourism, recreation.	Somewhat effective at preventing development along the riverfront.	Include setbacks from waterways and prevent construction in identified floodplains.
Subdivision Regulations	Preliminary and Definitive Plan	Proposed storm drainage, sewer, water supply, and major site features (including natural features) must be included.	Somewhat effective for preventing incompatible development.	
	Design Standards	Environmental Analysis – includes impact analysis of recharge and infiltration.	Effective for protecting natural processes like flood mitigation.	
		Development Impact Statement – describes natural features, drainage systems	Effective for encouraging compatible development.	
		Storm Drainage – determines impact of development to downstream.	Effective for mitigating impacts of development to downstream.	
		Site Preservation – significant natural and cultural sites must be noted and preserved when applicable.	Effective for protecting important natural features.	
	Excavation and Grading –	Effective for minimizing		

What is the NFIP's Community Rating System?			
Springfield Development Plan	The National Flood Insurance Program has developed suggested floodplain management activities for those communities who wish to more thoroughly manage or reduce the impact of flooding in their jurisdiction. Through use of a rating system (CRS), a community's floodplain management efforts can be evaluated for effectiveness. The rating, which indicates an above average floodplain management effort, is then factored into the premium cost for flood insurance policies sold in the community. The higher the rating achieved in that community, the greater the reduction in flood insurance premium costs for local property owners. MEMA can provide additional information regarding participation in the NFIP CRS Program.	Effective at identifying key policy actions necessary to preserve open space, streams and brooks.	Work to implement relevant goals and policies in Plan.
National Flood Insurance Program Participation	As of 2006, there were 27 homeowners with flood insurance policies. [Note: 75 properties on CIS list]	Somewhat effective, provided that the city remains enrolled in the National Flood Insurance Program.	Increase the number of homeowners with Flood Insurance to provide coverage to all properties on CIS list.

Severe Snow/Ice Storm

Winter storms can be especially challenging for emergency management personnel. The Massachusetts Emergency Management Agency (MEMA) serves as the primary coordinating entity in the statewide management of all types of winter storms and monitors the National Weather Service (NWS) alerting systems during periods when winter storms are expected. Even though the storm has usually been forecast, there is no certain way for predicting its length, size or severity. Therefore, mitigation strategies must focus on preparedness prior to a severe snow/ice storm.

Current Mitigation Measures

The City's current mitigation tools and strategies focus on preparedness, with many regulations and standards established based on safety during storm events. These current mitigation strategies are outlined in the following table.

Note: To the extent that some of the damages from a winter storm can be caused by flooding, all of the flood protection mitigation measures described in Table 5-1 in the previous section can also be considered as mitigation measures for severe snow/ice storms.

Table 5-2: Existing Severe Snow/Ice Storm Hazard Mitigation Measures

Existing Strategy		Description	Effectiveness	Potential Changes
Zoning By-Law	Wireless Communications Structures and Facilities	Structures are required to be as minimally invasive as possible to the environment, have height restrictions, and	Very effective for preventing damage in the case of a severe storm.	

		must have be setback 200 % of the structure's height; 100% allowed for "stealth design towers".		
Subdivision Regulations	Design Standards	Utilities must be placed underground at time of construction	Effective for preventing power loss.	
		Street grade regulations (maximum 10%)	Effective.	
State Building Code		The City of Springfield has adopted the Massachusetts State Building Code.	Effective.	
Backup Electric Power		Identified shelters have backup power, three mobile generators	Very effective in case of power loss.	
Tree Management		List of dangerous trees created annually for WMECO.	Very effective, preventative collaboration.	Reduce power outages resulting from wind, snow and ice storms.

Future Mitigation Measures

Several potential changes to the City's current strategies have been identified in the above table, and these, as well as recommendations for other future mitigation strategies, are compiled below:

- Work with Western Mass Electric Company to facilitate the underground placement of new utility lines in general and existing utility lines in locations where repetitive outages occur (as applicable).
- Determine if existing generators at shelters are effective, replace if not effective.
- Increase enforcement of restrictions prohibiting residents from plowing snow into the road.
- Participate in the creation of a Regional Debris Management Plan.

What is a Regional Debris Management Plan?

Natural disasters can precipitate a variety of debris, including trees, construction and demolition materials and personal property. After a natural disaster, potential threats to the health, safety and welfare of impacted citizens can be minimized through the implementation of a debris management plan. Such a plan can be critical to recovery efforts after a disaster, including facilitating the receipt of FEMA funds for debris clearance, removal and disposal.

Hurricanes/Severe Wind

Of all the natural disasters that could potentially impact Springfield, hurricanes provide the most lead warning time because of the relative ease in predicting the storm's track and potential landfall. MEMA assumes "standby status" when a hurricane's location is 35 degrees North Latitude (Cape Hatteras) and "alert status" when the storm reaches 40 degrees North Latitude (Long Island). Even with significant warning, hurricanes can do significant damage – both due to flooding and severe wind.

The flooding associated with hurricanes can be a major source of damage to buildings, infrastructure and a potential threat to human lives. Therefore, all of the flood protection mitigation measures described in Table 5-1 can also be considered hurricane mitigation measures.

The high winds that oftentimes accompany hurricanes can also damage buildings and infrastructure. But regulations can be put into place to help minimize the extent of wind damages.

The City's current mitigation strategies to deal with severe wind are equally applicable to wind events such as tornadoes and microbursts. Therefore, the analysis of severe wind strategies is coupled with this hazard.

Tornadoes/Microbursts

The location and extent of potential damaging impacts of a tornado are completely unpredictable. Most damage from tornadoes or microbursts comes from high winds that can fell trees and electrical wires, generate hurtling debris and, possibly, hail. According to the Institute for Business and Home Safety, the wind speeds in most tornadoes are at or below design speeds that are used in current building codes. In addition, current land development regulations can also help prevent wind damages.

The following table outlines the City's existing mitigation strategies that help prevent wind damages, whether from hurricanes, tornadoes, microbursts, or any other event.

**Table 5-3: Existing Severe Wind Hazard Mitigation Measures
(Including Hurricane, Tornado, Microburst Hazards)**

Existing Strategy		Description	Effectiveness	Potential Changes
Zoning By-law	Mobile Homes/Trailers	Mobile homes are permitted with some additional regulations; trailers are only allowed as temporary living quarters.	Not effective for preventing damage to susceptible structures	Restricting location of mobile homes in high-hazard area and establish a buy-back program for high-risk mobile homes.

	Wireless Communications Structures and Facilities	Structures are required to be as minimally invasive as possible to the environment, have height restrictions, and must have be setback 200 % of the structure's height; 100% allowed for "stealth design towers".	Very effective for preventing damage in the case of a severe storm.	
Subdiv Regs	Design Standards	Utilities must be placed underground	Effective for preventing power loss.	
	State Building Code	The City has adopted the MA State Building Code.	Effective.	
	Tree Management	List of dangerous trees created annually for WMECO.	Very effective, preventative collaboration.	

Future Mitigation Measures

Several potential changes to the City's current strategies have been identified in the above table, and these, as well as recommendations for other future mitigation strategies, are compiled below:

- Work with Western Mass Electric Company to facilitate the underground placement of new utility lines in general and existing utility lines in locations where repetitive outages occur (as applicable).
- Participate in the creation of a Regional Debris Management Plan.

Wildfire/Brushfire

Although somewhat common, the vast majority of brushfires in Springfield are small and quickly contained. However, as with any illegal fire or brushfire, there is always the risk that a small brushfire could grow into a larger, more dangerous wildfire, especially if conditions are right. Therefore, it is important to take steps to prevent wildfires and brushfires from turning into natural disasters.

Current Mitigation Measures

The following table identifies what the City is currently doing to manage brushfires and makes some suggested potential changes and recommendations for decreasing the City's likelihood of being heavily impacted by a wildfire or brushfire.

Table 5-4: Existing Wildfire/Brushfire Hazard Mitigation Measures			
Existing Strategy	Description	Effectiveness	Potential Changes

Zoning By-Law	Wireless Communications Structures and Facilities	Fire Chief is involved in final review of site plan for structure.	Effective.	
Subdivision Regulations	General	Fire Chief may be consulted on any subdivision approval.	Effective.	
	Design Standards	Fire protection is included in the required Development Impact Statement and as a part of the rules regulating water supply to the subdivision.	Effective.	
Burn Permits		Residents must obtain burn permits, and personnel provide information on safe burn practices.	Somewhat effective.	Consider increasing enforcement of burning regulations, perhaps invoke penalties for offenders.
Public Education/ Outreach		The Fire Department has an ongoing educational program in the schools.	Effective.	None.

Future Mitigation Measures

Several potential changes to the City's current strategies have been identified in the above table, and these, as well as recommendations for other future mitigation strategies, are compiled below:

- Increase education and enforcement of burn permits; including pre-season review of regulations in public outreach campaign and/or invoking penalties for offenders.

Earthquake

Although there are five mapped seismological faults in Massachusetts, there is no discernable pattern of previous earthquakes along these faults nor is there a reliable way to predict future earthquakes along these faults or in any other areas of the state. Consequently, earthquakes are arguably the most difficult natural hazard to plan for.

Most buildings and structures in the state were constructed without specific earthquake resistant design features. In addition, earthquakes precipitate several potential devastating secondary effects such as building collapse, utility pipeline rupture, water contamination, and extended power outages. Therefore, many of the mitigation efforts for other natural hazards identified in this plan may be applicable during the City's recovery from an earthquake.

Current Mitigation Measures

The City's most relevant existing mitigation measures are described in the following table.

Table 5-5: Existing Earthquake Hazard Mitigation Measures

Existing Strategy		Description	Effectiveness	Potential Changes
Zoning By-law	Wireless Communications Structures and Facilities	Structures are required to be as minimally invasive as possible to the environment, have height restrictions, and must have be setback 1.25 times the structure's height.	Very effective for preventing damage in the case of an earthquake.	
State Building Code		The City of Springfield has adopted the State Building Code.	Effective for new buildings only.	Evaluate older structures categorized as critical facilities to determine if they are earthquake resistant.

Dam Failure

Dam failure is a highly infrequent occurrence, but a severe incident could prove catastrophic. In addition, dam failure most often coincides with flooding, so its impacts can be multiplied, as the additional water has no where to flow.

Current Mitigation Measures

The only mitigation measures currently in place are the state regulations governing the construction, inspection, and maintenance of dams. This is managed through the Office of Dam Safety at the Department of Conservation and Recreation.

Table 5-6: Existing Dam Failure Hazard Mitigation Measures

Existing Strategy	Description	Effectiveness	Potential Changes
New Dam Construction Permits	State law requires a permit for the construction of any dam.	Effective. Ensures dams are adequately designed.	
Dam Inspections	DCR has an inspection schedule that is based on the hazard rating of the dam (low, medium, high hazard).	Low. The responsibility for this is now on dam owners, who may not have sufficient funding to comply.	Remove or improve dam impoundments that have been identified as non-essential high-hazard dams.

Future Mitigation Measures

Recent changes in legislation have shifted some of the responsibility of dam safety onto dam owners. The City recognizes the need to adjust to this change. Several potential changes to the City's current strategies have been identified in the above table, and

these, as well as recommendations for other future mitigation strategies, are compiled below:

Action Item: Develop and implement plan to remove unnecessary high and significant hazard dams. Monsanto Chemical Co. Upper Dam and the Baystate Plumbing & Heating Pond Dam have already been identified as candidates

Responsible Department/Board: Emergency Management, Engineering

Proposed Completion Date: 2013

Rationale: Will remove the danger of dam failures in areas where dams are no longer required.

- Apply to the Hazard Mitigation Grant Program (HMGP) to improve or remove dams that have been identified as non-essential high-hazard dams.

Drought

Although Massachusetts does not face extreme droughts like many other places in the country, it is susceptible to dry spells and drought. And unlike other places, drought can most likely be effectively mitigated in regions like the Pioneer Valley if measures are put into place.

Current Mitigation Measures

Springfield has several water protection regulations in place, as evidenced in the section on flooding. Additional regulations and mitigation options, specific to drought mitigation, are included here.

Table 5-7: Existing Drought Hazard Mitigation Measures

Existing Strategy		Description	Effectiveness	Potential Changes
Zoning By-law				
Subdivision Regulations	Preliminary and Definitive Plan	Proposed storm drainage, sewer, water supply, and major site features (including natural features) must be included.	Effective for ensuring adequate water supply and preventing drainage problems.	
	Design Standards	Environmental Analysis – includes impact analysis of recharge and infiltration.	Effective for protecting natural processes like flood mitigation.	

		Site Preservation – significant natural and cultural sites must be noted and preserved when applicable.	Effective for protecting important natural features including waterbodies.	
		Excavation and Grading – regulates how earth removal must be conducted.	Effective for minimizing earth removal and preventing sedimentation.	
Springfield Community Development Plan		Makes several relevant recommendations regarding preventing drought, protecting water supply and quality.	Potentially effective step, if taken.	Implement recommendations.

Future Mitigation Measures

Potential changes to the City’s current strategies have been identified in the above table, and these, as well as recommendations for other future mitigation strategies, are compiled below:

- Implement recommendations from the Springfield Community Development Plan, dealing protection of water supply and quality.
- Create Water Conservation Guidelines, as education to City residents.

Hazardous Materials

Hazardous materials are in existence throughout City, and are constantly being moved on Springfield’s roads and highways. However, there is no way to anticipate where and when a hazardous materials spill or explosion could take place. Therefore, it makes is somewhat difficult to determine mitigation strategies, but Springfield has some regulations currently in place to mitigate the impacts of a hazardous materials disaster.

Table 5-8: Existing Hazardous Materials Hazard Mitigation Measures				
Existing Strategy		Description	Effectiveness	Potential Changes
Zoning By-law				Update definitions to be consistent with State definitions.
		All hazardous materials usage or storage must be registered with the Fire Chief.	Effective.	None

6: PRIORITIZED IMPLEMENTATION SCHEDULE

Summary of Critical Evaluation

The Springfield Hazard Mitigation Planning Committee reviewed each of the recommendation future mitigation measures identified, and used the following factors to prioritize mitigation projects:

- Ability to reduce loss of life
- Ability to reduce disaster damage
- Social acceptability
- Ability to complete or be combined w/other actions
- Technical feasibility / potential success
- Impact on the environment
- Administrative workability
- Ability to meet regulations
- Political acceptability
- Ability to save or protect historic structures
- Legal implementation
- Ability to meet other community objectives
- Economic impact
- The duration of its implementation period
- Environmental compatibility

Project Prioritization

The Springfield Hazard Mitigation Planning Committee created the following prioritized schedule for implementation of prioritized items. The table lists items in order of priority.

Note: As additional information becomes available regarding project leadership, timeline, funding sources, and/or cost estimates, the Plan will be reviewed and amended accordingly.

Table 6.1: Prioritized Implementation Schedule – Action Plan

Priority	Mitigation Action	Responsible Department/Board	Proposed Completion Date	Funding Source/ Estimated Cost	Incorporation into Existing Plans
	Develop and implement plan to remove unnecessary high and significant hazard dams. Monsanto Chemical Co. Upper Dam and the Baystate Plumbing & Heating Pond Dam have already been identified as candidates	Emergency Management, Engineering	2013		
	Evaluate critical facilities to determine if they are earthquake resistant.				
	Implement recommendations from the Springfield Community Development Plan, dealing protection of water supply and quality.				
	Create Water Conservation Guidelines, as education to City residents.				
	Work with Western Mass Electric Company to facilitate the underground placement of new utility lines in general and existing utility lines in locations where repetitive outages occur (as applicable).				
	Determine if existing generators at shelters are effective, replace if not effective.				
	Increase enforcement of restrictions prohibiting residents from plowing snow into the road.				
	Participate in the creation of a Regional Debris Management Plan.				

	Increase education and enforcement of burn permits; including pre-season review of regulations in public outreach campaign and/or invoking penalties for offenders.				
	Implement recommendations from the Springfield Community Development Plan, dealing protection of water supply and quality.				
	Create Water Conservation Guidelines, as education to City residents.				

7: PLAN ADOPTION & IMPLEMENTATION

Plan Adoption

Upon completion, copies of the Draft Local Hazards Mitigation Plan for the City of Springfield were distributed to the city boards for their review and comment. A public meeting was held by the Springfield Mayor to present the draft copy of the Springfield Local Natural Hazards Mitigation Plan to city officials and residents and to request comments from this committee and the general public. The Natural Hazards Mitigation Plan was formally approved by the Mayor and forwarded to the Massachusetts Emergency Management Agency (MEMA) and the Federal Emergency Management Agency (FEMA) for their approval.

Plan Implementation

The implementation of the Springfield Local Natural Hazards Mitigation Plan will begin following its formal adoption by the Springfield Mayor and approval by MEMA and FEMA. Specific city departments and boards will be responsible for ensuring the development of policies, bylaw revisions, and programs as described in Sections 5 and 6 of this plan. The Springfield Natural Hazards Planning Committee will oversee the implementation of the plan.

Plan Monitoring and Evaluation

The measure of success of the Springfield Local Natural Hazards Mitigation Plan will be the number of identified mitigation strategies implemented. In order for the city to become more disaster resilient and better equipped to respond to natural disasters, there must be a coordinated effort between elected officials, appointed bodies, city employees, regional and state agencies involved in disaster mitigation, and the general public.

The Springfield Natural Hazards Planning Committee will meet on an annual basis or as needed (i.e., following a natural disaster) to monitor the progress of implementation, evaluate the success or failure of implemented recommendations, and brainstorm for strategies to remove obstacles to implementation. Those parties noted in Section 6 of the plan, all of whom have a representative on the Springfield Natural Hazards Planning Committee, will be responsible for seeing that the actions are implemented and will report on their progress at the annual plan review meetings.

Outreach to the public, surrounding communities, agencies, businesses, academia, non-profits, or other interested parties outside of the City of Springfield will be done in advance of each annual meeting in order to solicit their participation in assessment of the plan. Following these discussions, it is anticipated that the committee may decide to reassign the roles and responsibilities for implementing mitigation strategies to different city departments and/or revise the goals and objectives contained in the plan. At a minimum, the committee will review and update the plan every five years,

beginning in the fall of 2013. The meetings of the committee will be organized and facilitated by the Emergency Management Director or the Springfield Mayor.

**CERTIFICATE OF ADOPTION
CITY OF SPRINGFIELD, MASSACHUSETTS
MAYOR
A RESOLUTION ADOPTING THE SPRINGFIELD
NATURAL HAZARD MITIGATION PLAN**

WHEREAS, the City of Springfield established a Committee to prepare the Springfield Hazard Mitigation plan; and

WHEREAS, several public planning meetings were held between October and November 2012 regarding the development and review of the Springfield Hazard Mitigation Plan; and

WHEREAS, the Springfield Hazard Mitigation Plan contains several potential future projects to mitigate hazard damage in the City of Springfield, and

WHEREAS, a duly-noticed public hearing was held by the Springfield Mayor on _____, 2012 to formally approve and adopt the Springfield Hazard Mitigation Plan.

NOW, THEREFORE BE IT RESOLVED that the Springfield Mayor adopts the Springfield Hazard Mitigation Plan.

ADOPTED AND SIGNED this _____, 2012.

Dominic Sarno, Mayor
City of Springfield

ATTEST

APPENDICES

Appendix A – Technical Resources (in the event of an emergency)

1) Agencies

Massachusetts Emergency Management Agency (MEMA).....	508/820-2000
Hazard Mitigation Section	617/626-1356
Federal Emergency Management Agency (FEMA)	617/223-4175
MA Regional Planning Commissions:	
Berkshire Regional Planning Commission (BRPC).....	413/442-1521
Cape Cod Commission (CCC).....	508/362-3828
Central Massachusetts Regional Planning Commission (CMRPC).....	508/693-3453
Franklin Regional Council of Governments (FRCOG).....	413/774-3167
Martha's Vineyard Commission (MVC).....	508/693-3453
Merrimack Valley Planning Commission (MVPC).....	978/374-0519
Metropolitan Area Planning Council (MAPC).....	617/451-2770
Montachusett Regional Planning Commission (MRPC).....	978/345-7376
Nantucket Planning and Economic Development Commission (NP&EDC).....	508/228-7236
Northern Middlesex Council of Governments (NMCOG).....	978/454-8021
Old Colony Planning Council (OCPC).....	508/583-1833
Pioneer Valley Planning Commission (PVPC).....	413/781-6045
Southeastern Regional Planning and Economic Development District (SRPEDD).....	508/823-1803
MA Board of Building Regulations & Standards (BBRS).....	617/227-1754
MA Coastal Zone Management (CZM).....	617/626-1200
DCR Water Supply Protection.....	617/626-1379
DCR Waterways.....	617/626-1371
DCR Office of Dam Safety.....	508/792-7716
DFW Riverways.....	617/626-1540
MA Dept. of Housing & Community Development.....	617/573-1100
Woods Hole Oceanographic Institute.....	508/457-2180
UMass-Amherst Cooperative Extension.....	413/545-4800
National Fire Protection Association (NFPA).....	617/770-3000
New England Disaster Recovery Information X-Change (NEDRIX – an association of private companies & industries involved in disaster recovery planning).....	781/485-0279
MA Board of Library Commissioners.....	617/725-1860
MA Highway Dept, District 2.....	413/582-0599
MA Division of Marine Fisheries.....	617/626-1520
MA Division of Capital & Asset Management (DCAM).....	617/727-4050
University of Massachusetts/Amherst.....	413/545-0111
Natural Resources Conservation Services (NRCS).....	413/253-4350
MA Historical Commission.....	617/727-8470
U.S. Army Corps of Engineers.....	978/318-8502
Northeast States Emergency Consortium, Inc. (NESEC).....	781/224-9876
National Oceanic and Atmospheric Administration: National Weather Service; Tauton, MA.....	508/824-5116
US Department of the Interior: US Fish and Wildlife Service	413/253-8200
US Geological Survey	508/490-5000

2) Mitigation Funding Resources

404 Hazard Mitigation Grant Program (HMGP)	Massachusetts Emergency Management Agency
406 Public Assistance and Hazard Mitigation	Massachusetts Emergency Management Agency
Community Development Block Grant (CDBG).....	DHCD, also refer to RPC
Dam Safety Program.....	MA Division of Conservation and Recreation

Disaster Preparedness Improvement Grant (DPIG)Massachusetts Emergency Management Agency
 Emergency Generators Program by NESEC†Massachusetts Emergency Management Agency
 Emergency Watershed Protection (EWP) Program.....USDA, Natural Resources Conservation
 Service Flood Mitigation Assistance Program (FMAP)Massachusetts Emergency Management Agency
 Flood Plain Management Services (FPMS).....US Army Corps of Engineers
 Mitigation Assistance Planning (MAP).....Massachusetts Emergency Management Agency
 Mutual Aid for Public Works.....Western Massachusetts Regional Homeland Security Advisory Council
 National Flood Insurance Program (NFIP) †Massachusetts Emergency Management Agency
 Power of Prevention Grant by NESEC†Massachusetts Emergency Management Agency
 Roadway Repair & Maintenance Program(s).....Massachusetts Highway Department
 Section 14 Emergency Stream Bank Erosion & Shoreline ProtectionUS Army Corps of Engineers
 Section 103 Beach Erosion.....US Army Corps of Engineers
 Section 205 Flood Damage Reduction.....US Army Corps of Engineers
 Section 208 Snagging and ClearingUS Army Corps of Engineers
 Shoreline Protection Program.....MA Department of Conservation and Recreation
 Various Forest and Lands Program(s).....MA Department of Environmental Protection
 Wetlands ProgramsMA Department of Environmental Protection

†NESEC – Northeast States Emergency Consortium, Inc. is a 501(c)(3), not-for-profit natural disaster, multi-hazard mitigation and emergency management organization located in Wakefield, Massachusetts. Please, contact NESEC for more information.

† Note regarding National Flood Insurance Program (NFIP) and Community Rating System (CRS): The National Flood Insurance Program has developed suggested floodplain management activities for those communities who wish to more thoroughly manage or reduce the impact of flooding in their jurisdiction. Through use of a rating system (CRS rating), a community’s floodplain management efforts can be evaluated for effectiveness. The rating, which indicates an above average floodplain management effort, is then factored into the premium cost for flood insurance policies sold in the community. The higher the rating achieved in that community, the greater the reduction in flood insurance premium costs for local property owners. MEMA can provide additional information regarding participation in the NFIP-CRS Program.

3) Internet Resources

Sponsor	Internet Address	Summary of Contents
Natural Hazards Research Center, U. of Colorado	http://www.colorado.edu/libbase/hazards/	Searchable database of references and links to many disaster-related websites.
Atlantic Hurricane Tracking Data by Year	http://wxp.eas.purdue.edu/hurricane	Hurricane track maps for each year, 1886 – 1996
National Emergency Management Association	http://nemaweb.org	Association of state emergency management directors; list of mitigation projects.
NASA – Goddard Space Flight Center “Disaster Finder:	http://www.gsfc.nasa.gov/ndrd/disaster/	Searchable database of sites that encompass a wide range of natural disasters.

NASA Natural Disaster Reference Database	http://ftpwww.gsfc.nasa.gov/ndrd/main/html	Searchable database of worldwide natural disasters.
U.S. State & Local Gateway	http://www.statelocal.gov/	General information through the federal-state partnership.
National Weather Service	http://nws.noaa.gov/	Central page for National Weather Warnings, updated every 60 seconds.
USGS Real Time Hydrologic Data	http://h20.usgs.gov/public/realtime.html	Provisional hydrological data
Dartmouth Flood Observatory	http://www.dartmouth.edu/artsci/geog/floods/	Observations of flooding situations.
FEMA, National Flood Insurance Program, Community Status Book	http://www.fema.gov/fema/csb.html	Searchable site for access of Community Status Books
Florida State University Atlantic Hurricane Site	http://www.met.fsu.edu/explores/tropical.html	Tracking and NWS warnings for Atlantic Hurricanes and other links
The Tornado Project Online	http://www.tornadoject.com/	Information on tornadoes, including details of recent impacts.
National Severe Storms Laboratory	http://www.nssl.uoknor.edu/	Information about and tracking of severe storms.
Independent Insurance Agents of America IIAA Natural Disaster Risk Map	http://www.iaa.ia.com/ndcmap.html	A multi-disaster risk map.
Earth Satellite Corporation	http://www.earthsat.com/	Flood risk maps searchable by state.
USDA Forest Service Web	http://www.fs.fed.us/land	Information on forest fires and land management.

Appendix B – List of Acronyms

FEMA	Federal Emergency Management Agency
MEMA	Massachusetts Emergency Management Agency
PVPC	Pioneer Valley Planning Commission
EPA	Environmental Protection Agency
DEP	Massachusetts' Department of Environmental Protection
NWS	National Weather Service
HMGP	Hazard Mitigation Grant Program
FMA	Flood Mitigation Assistance Program
SFHA	Special Flood Hazard Area
CIS	Community Information System
DCR	Massachusetts Department of Conservation and Recreation
FERC	Federal Energy Regulatory Commission
TRI	Toxics Release Inventory
FIRM	Flood Insurance Rate Map
NFIP	National Flood Insurance Program
CRS	Community Rating System
BOH	Board of Health
LEPC	Local Emergency Planning Committee
EMD	Emergency Management Director
Con Com	Conservation Commission
EOC	Emergency Operations Center
CEM Plan	Comprehensive Emergency Management Plan
WMECO	Western Massachusetts Electric Company
HAZMAT	Hazardous Materials

Appendix C – Past & Potential Hazards/Critical Facilities Map

Appendix D – Documentation of the Planning Process

Springfield Hazard Mitigation Planning Committee
Meeting #1 October 24, 2012 at 9 a.m.
Springfield Office of Emergency Preparedness, 1212 Carew Street
AGENDA

1) Introduction & Purpose of Committee

2) What is Hazard Mitigation Planning?

3) Review of Draft Plan

4) Identify Critical Facilities & Evacuation Routes Potentially Affected By Hazard Areas

- | | |
|--------------------------------|---------------------------------------|
| - Emergency Operations Center | - Nursing Homes |
| - Emergency Fuel Facilities | - Elderly Housing |
| - Town/City Hall | - Day-Care Facilities |
| - Police Station | - Correctional Facilities |
| - Fire Station | - Other Congregate Care Facilities |
| - Public Works Garages | - Shelters |
| - Water Treatment Facilities | - Special Needs Populations |
| - Sewage Treatment Plants | - Hazardous Materials Facilities |
| - Water Tower/Supply Pumps | - Access Roads to Critical Facilities |
| - Power Plants | - Evacuation Routes |
| - Electrical Power Substations | - Unique or Historic Resources |
| - Schools | - Commercial Economic Impact Areas |
| - Major Highways and Roadways | - Socio-Economic Impact Areas |
| - Bridges | - Areas with Second Language Needs |
| - Dams | - Hospitals |

5) Hazards Analysis Methodology

- Identify Past Hazard Occurrences, Location and Damage Assessments
- Review Table 3.1 - Hazard Identification and Analysis Worksheet
- Review Table 6.1 - Prioritized Implementation Schedule – Action Plan

6) Agree on Public Engagement

- How to address public comments
- How to include the public in the plan maintenance

7) Review Vulnerability Assessment Methodology and Potential Loss Estimates

8) Schedule and Agenda for next meeting

TOWN CLERK: Please Post this notice per M.G. L. Chapter 39, Section 23, A-C

****Note: The public is encouraged to attend****

**Springfield Hazard Mitigation Planning Committee
Meeting #2, November 7, 2012, 9 a.m.
Springfield Office of Emergency Preparedness, 1212 Carew Street
AGENDA**

- 1) Review the Public Comments**
- 2) Final Review of plan**
- 3) Affirm Action Plan of Hazard Mitigation Strategies**
- 4) Review Plan Adoption and Implementation**

CITY CLERK: Please Post this notice per M.G. L. Chapter 39, Section 23 A-C

****Note: The public is encouraged to attend****

Appendix E – Public Outreach

PRESS RELEASE

CONTACT: Catherine Miller, Pioneer Valley Planning Commission, (413) 781-6045

FOR IMMEDIATE RELEASE
December 14, 2007

Pre-Disaster Mitigation Plans Under Development

The Pioneer Valley Planning Commission is beginning the process of drafting pre-disaster mitigation plans for the Communities of Amherst, Belchertown, Brimfield, Chicopee, Cummington, Goshen, Granby, Huntington, Palmer, South Hampton, **Springfield**, Westfield, West Springfield, Westhampton, Williamsburg, and Worthington.

This planning effort is being undertaken to help communities assess the risks they face from natural hazards, identify action steps that can be taken to prevent damage to property and loss of life, and prioritize funding for mitigation efforts. A mitigation action is any action taken to reduce or eliminate the long-term risk to human life and property from hazards.

Individuals interested in their community's Hazard Mitigation plan can contact PVPC to request information on their community's plan development. In 2006-2007, PVPC facilitated development of plans for 16 communities in Hampshire and Hampden counties. Following completion of this second round of 16 hazard mitigation plans, PVPC will be developing a regional Hazard Mitigation plan. Communities with approved plans will be eligible for Hazard Mitigation Grant Program funding from the Massachusetts Emergency Management Agency.

These pre-disaster mitigation plans are being developed with assistance from the Pioneer Valley Planning Commission with funding provided by the Massachusetts Emergency Management Agency. For additional information, please contact Catherine Miller at (413) 781-6045 or cmiller@pvpc.org.

PRESS RELEASE

CONTACT: Robert Hassett, Director, Office of Emergency Preparedness (413) 787-6720

FOR IMMEDIATE RELEASE

June 13, 2012

Pre-Disaster Mitigation Plans Under Development

The Springfield Office of Emergency Preparedness is beginning the process of drafting pre-disaster mitigation plans for the City of Springfield.

This planning effort is being undertaken to help the City assess it faces from natural hazards, identify action steps that can be taken to prevent damage to property and loss of life, and prioritize funding for mitigation efforts. A mitigation action is any action taken to reduce or eliminate the long-term risk to human life and property from hazards.

Individuals interested in their community's Hazard Mitigation plan can contact Office of Emergency Preparedness (413-787-6720 or rhassett@springfieldcityhall.com) to request information on their community's plan development. When Springfield's plan is approved it will be eligible for Hazard Mitigation Grant Program funding from the Massachusetts Emergency Management Agency.

PRESS RELEASE

CONTACT: Robert Hassett, Director, Office of Emergency Preparedness (413) 787-6720

FOR IMMEDIATE RELEASE
October 17, 2012

Pre-Disaster Mitigation Plans Public Comment Period

The City of Springfield Office of Emergency Preparedness, in conjunction with representatives from the City's Police, Fire, Health, Public Works and Planning Departments, has produced a final draft of its Hazard Mitigation Plan. The plan is currently available for public review and comment on the City of Springfield's website (http://www3.springfield-ma.gov/cos/dept_emergency.0.html). Paper copies of the plans may be obtained at the Mayor's Office, The plans will be available for the next two (2) weeks.

This planning effort is being undertaken to help the City assess the risks it faces from natural hazards, identify action steps that can be taken to prevent damage to property and loss of life, and prioritize funding for mitigation efforts. A mitigation action is any action taken to reduce or eliminate the long-term risk to human life and property from hazards. Communities with approved plans are eligible for Hazard Mitigation Grant Program funding from the Massachusetts Emergency Management Agency.

The City of Springfield's pre-disaster mitigation plans was developed with the assistance from the Pioneer Valley Planning Commission (PVPC) with funding provided by the Massachusetts Emergency Management Agency. For additional information on PVPC's work, please contact Catherine Ratte' at (413) 781-6045 or cratte@pvpc.org.

Appendix F – Rebuild Springfield’s Master Plan Executive Summary



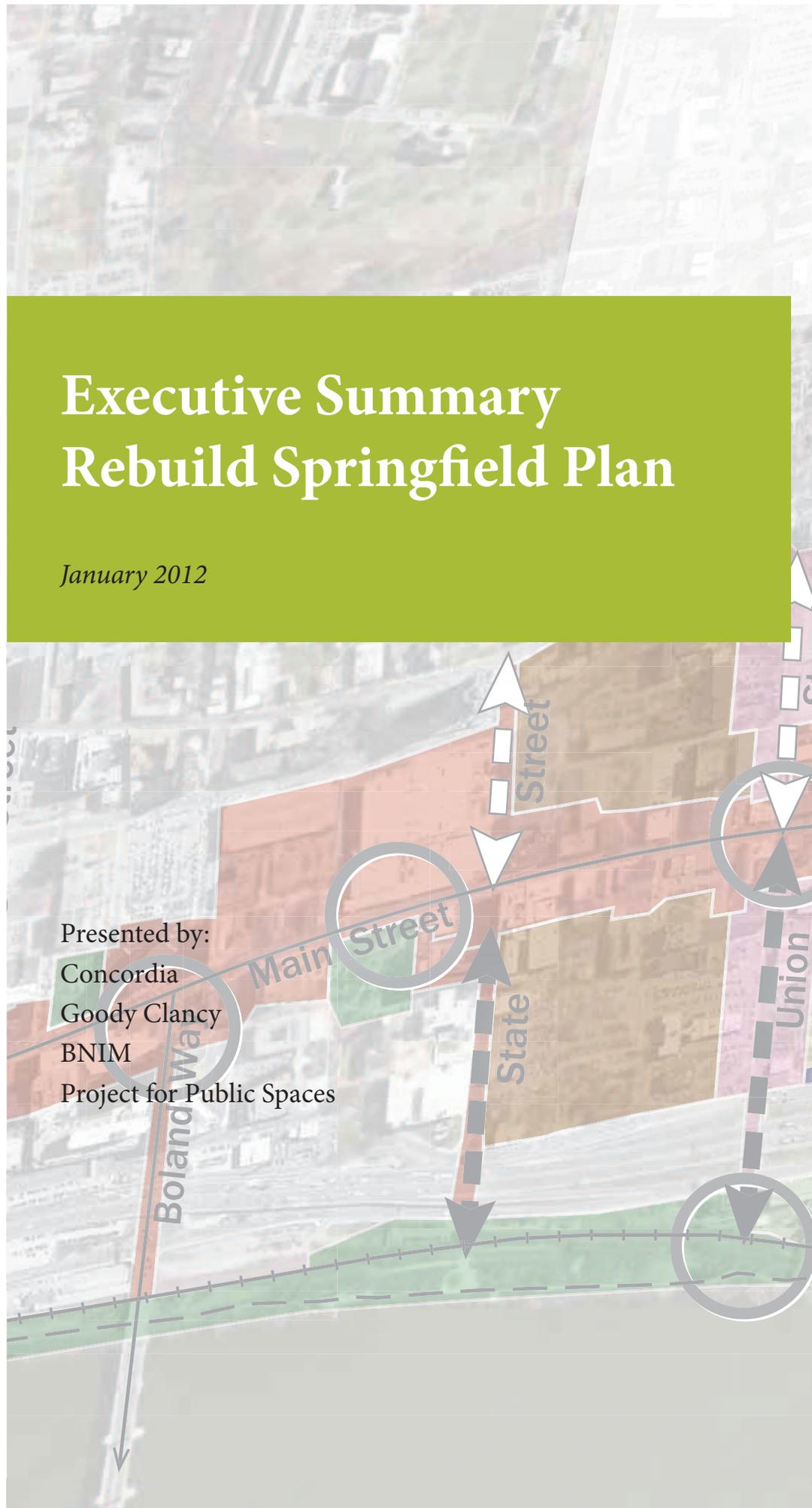
Springfield
Redevelopment
Authority



Executive Summary Rebuild Springfield Plan

January 2012

Presented by:
Concordia
Goody Clancy
BNIM
Project for Public Spaces





THE CITY OF SPRINGFIELD, MASSACHUSETTS

MAYOR DOMENIC J. SARNO

HOME OF THE BASKETBALL HALL OF FAME

February 1, 2012

Dear Citizens and Stakeholders of Springfield:

It is with great hope, optimism and confidence in the future of our city that we present the enclosed Executive Summary of the Rebuild Springfield Plan. This plan is directly shaped by the more than 2,000 voices of city residents and stakeholders who came out in our public meetings and online forums to share their aspirations, frustrations and vision for how to make the City of Springfield a better place for all of us.

When the terrible tornado of June 1, 2011 touched down in Western Massachusetts, the storm created a path of destruction that took lives and inflicted tremendous physical damage. Perhaps what we feel most strongly, however, is not the physical toll on our city, but the longer lasting impact of how we view ourselves as families, neighbors, citizens and agents of change.

Over the past several months, we have come together as a community to create a comprehensive revitalization plan that is built on concrete steps and a true vision for what is possible. Three things are central to this plan for rebuilding:

- This plan is for, by and about the people of Springfield. Nearly every suggestion and actionable step came directly from the people who live, work and invest in our city.
- This plan is not just about repairing what the tornado destroyed. This plan reaches beyond the individual structures that sustained damage and imagines ways of strengthening our city as a dynamic place to live, work and visit. As seen in the enclosed summary, this plan is also a blueprint with identifiable steps and strategies.
- And finally, the only way we will achieve these goals is to create partnerships and new ways of working together to turn these ideas into reality. I look forward to across-the-board collaboration in its implementation.

We invite all of you to become a builder of this plan, whether it is on your own block or anywhere else in the city. You have already spoken about your aspirations for Springfield and have demonstrated your ongoing resiliency. Now, we ask you to stand shoulder to shoulder with your fellow citizens and become involved in helping us make this plan a reality.

Respectfully,

Domenic J. Sarno
Mayor

Executive Summary

The Rebuild Springfield Plan was initiated by Mayor Domenic J. Sarno in response to the June 1, 2011 tornado that ripped through the City of Springfield. The Mayor recognized this time of planning and rebuilding as an opportunity to think beyond the storm and develop plans to bring the city back bigger, better and stronger. A public/private partnership between DevelopSpringfield and the Springfield Redevelopment Authority was established to engage the citizens of the city in a systematic planning process. A fifteen member Rebuild Springfield Advisory Committee was appointed to help guide that process.

Over the last six months, nineteen separate community meetings with an aggregate attendance of about 2,000 citizens have been held in various locations, primarily in the areas impacted by the tornado. This Rebuild Springfield Plan is built on the hopes, aspirations, suggestions and criticisms voiced in these meetings. In a very real sense, the residents who attended these meetings are the authors of this Plan. The collective voices of Springfield expressed in this Plan constitute a mandate to implement this Plan in a systematic fashion as quickly as possible.

The Rebuild Springfield Plan builds upon and incorporates many previous plans, reports, and studies from a variety of organizations and stakeholders in Springfield, including City plans and documents, neighborhood plans, ULI reports, and many other studies.

The Rebuild Springfield initiative is about more than simply returning the city to its pre-tornado condition. The intent of this plan is to establish realistic short-term and long-term visions for the future of Springfield and create recommendations around people, places and programs that will guide the revitalization of this Western Massachusetts hub.

The Rebuild Springfield Plan has two levels of focus. Rebuilding strategies address both the tornado-impacted neighborhoods and the city as a whole. The neighborhoods affected by the tornado were organized into three Planning Districts:

District 1

*Metro Center
South End*

District 2

*Maple-High/Six Corners, Old Hill
Upper Hill
Forest Park*

District 3

*East Forest Park
Sixteen Acres*



Citizens throughout Springfield shared their thoughts about the potential for revitalization in district and citywide meetings, as well as online forums.

Citywide and District recommendations are organized around a systemic model called the Community Nexus. This includes the Physical, Cultural, Social, Organizational, Economic, and Educational assets of the community. By using this model, residents and stakeholders have created a holistic plan for Springfield.

CITYWIDE PLAN

This Executive Summary will outline the Nexus Recommendations. Not included in the Executive Summary, but addressed in the Rebuild Springfield Plan which can be accessed at www.rebuildspringfield.com are the following:

- Breadcrumbs – a trail of origin for recommendations
- Detailed description of the recommendations
- Partnerships/Stakeholders
- Resource Needs
- Potential Resource Opportunities
- Precedents/Best Practices
- Priority Level
- Action Steps
- Project Location

DISTRICT PLANS

This Executive Summary will present an overview of strategic recommendations with more detailed strategies and implementation steps addressed in the full Rebuild Springfield plan document that will be available at www.rebuildspringfield.com.

CITYWIDE PLAN | Recommendations Summary

Physical Domain:

This category is defined by the physical resources that encompass the sum of the community's built and natural assets. These resources include buildings, bridges, highways and even telecommunications infrastructure as well as natural resources like parks and other outdoor recreation areas.

1. Develop a process for transforming vacant lots and structures into community assets
2. Focus transportation resources to better serve and connect Springfield residents
3. Build on existing physical assets to celebrate and improve Springfield's aesthetic character and infrastructure
4. Plan for and take advantage of lessons learned from recent disasters by creating and publicizing a comprehensive Disaster Preparedness Plan
5. Design, develop, and operate places and spaces that are efficient and respectful of natural and human resources

Cultural Domain:

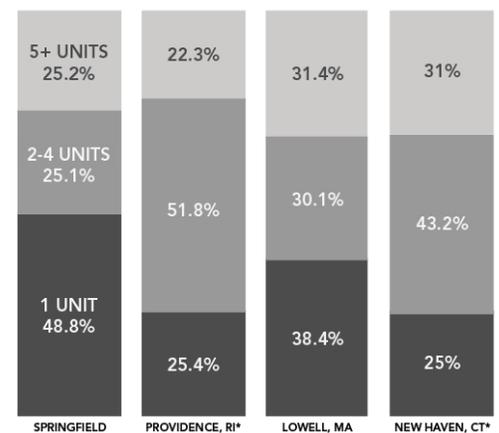
This community system encompasses all of the community's cultural resources. Included in this category is a broad range of cultural spaces, artifacts, programs, and organizations related to the expression of individual and communal values and aesthetics.



At the heart of a strong community is involvement and participation by its citizens.



BREAKDOWN OF HOUSING BY UNITS PER STRUCTURE



*Identified as "Resurgent Cities" in the Federal Reserve Bank of Boston's 2009 report, *Reinvigorating Springfield's Economy: Lessons from Resurgent Cities*



1. Better connect the community to its cultural amenities and assets through coordinated outreach and diverse events and arts programming
2. Support and grow the arts and culture sector through a series of “lighter, quicker, cheaper” cultural events
3. Celebrate the old and new cultural diversity of Springfield

Organizational Domain:

This category encompasses all the community’s organizational needs and resources. Included in this category are organizational spaces and programs that address the various components of community governance, including the school committee, city elected officials, various clubs, and myriad other civic organizations. This category also identifies how decisions made on behalf of the community-at-large are developed, deliberated and implemented.

1. Strengthen DevelopSpringfield as the primary private sector organization to partner with the City and to take a leadership role in guiding Springfield’s future
2. Establish a body that coalesces community organizations to achieve efficiency and efficacy through collaboration and cooperation

Economic Domain:

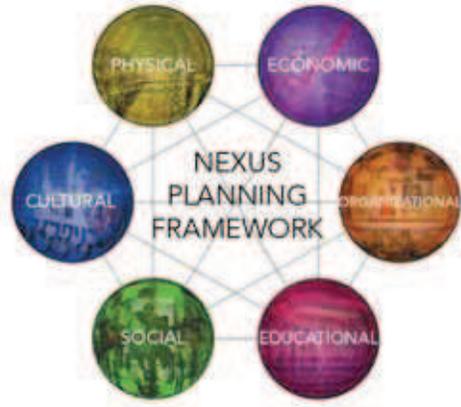
This category addresses the economic environment. Represented here are economic spaces, programs and activities related to business and commerce assets and opportunities. Included are activities ranging from regional and local economic development programs to innovations and initiatives developed by private interests - from goods to natural capital, from formal trade to exchange and donations.

1. Develop and harness Springfield’s role as the economic heart of the Pioneer Valley
2. Streamline the process of investment and provide creative incentives to encourage economic development
3. Expand the presence and influence of career/workforce development and educational partnerships to provide all residents with an opportunity to meaningfully contribute to Springfield’s economy

Educational Domain:

Educational resources are defined as encompassing all of the community’s assets that are allocated to lifelong learning. Included in this category are functional spaces, curricula and instructional programs for all Pre-K to 12, community college and university programs, as well as more informal public and private learning spaces and activities such as civil service training or individual skills development programs.

1. Put schools and libraries at the center of creating a nexus of places, programs, and access to technology to meet community needs
2. Better engage the public in the process and importance of education reform
3. Create a system of connected and integrated partnerships for a continuum of education



The city-wide planning process is organized according to the six domains of a healthy and vibrant community.

Social Domain:

This category encompasses the community’s social resources, where social spaces and programs developed largely by governmental and not-for-profit entities support the variety of the health and human assets needed to maintain a healthy community infrastructure. Included in this domain are programs involving a wide range of social services, housing, justice, and healthcare.

1. Improve the reality and perception of public safety in Springfield
2. Attract a vibrant and youthful population to be stewards of Springfield
3. Improve landowner, landlord oversight
4. Provide health and wellness services on a community scale
5. Provide equal access to a variety of housing options

Overall Domain:

This domain addresses overarching citywide recommendations that impact all other recommendations in some way.

1. Make a concerted effort to improve the image and perception of Springfield
2. Implement the Rebuild Springfield Plan. Monitor and champion measurable progress

DISTRICT PLANS – Executive Summaries

DISTRICT 1 | Metro Center, South End

A Plan to rebuild better in Metro Center and the South End—District One.

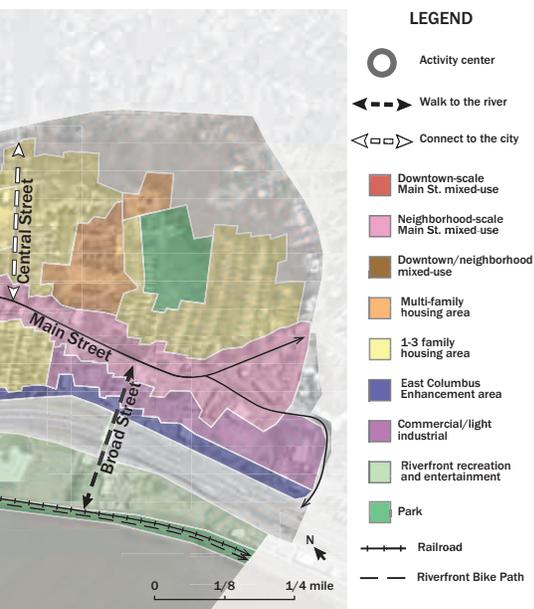
The June 1, 2011, tornado damaged multiple buildings and trees in the South End and, to a lesser degree, in Metro Center. Based on a community process, this plan offers a holistic framework of initiatives that will strengthen the community through partnerships, coordination, enforcement, and crime reduction; support new approaches to financing; and integrate strategies for housing, commercial and retail development, community institutions, public spaces, historic preservation, and urban design.

The rebuilding process after a disaster offers the potential for a fresh look at affected areas and the opportunity to **rebuild better**. Metro Center and the South End have a shared destiny along Main Street, which is why they were grouped together in District One. Rebuilding and revitalization efforts must be interrelated and mutually supportive. This is also an economic imperative. Successful 21st century cities have appealing downtown and near-downtown neighborhoods that attract people and talent—especially young people and entrepreneurs. As the pre-eminent urban center of the Pioneer Valley with unique historic character, Springfield has the opportunity to create and sustain a desirable, walkable, urban environment for living, working, playing and learning.

The Plan builds on previous plans for Metro Center and the South End. Implementation of these plans was underway before the tornado. In addition, this month



Historic buildings on Main Street at Union Street were severely damaged by the tornado. Source: USA Today.



the City and the Springfield Housing Authority were jointly awarded a major federal grant for the South End—a Choice Neighborhoods Initiative planning grant—that will help implement and accelerate the rebuilding process and position the City for additional federal funding.

The Plan is based on a community participation process. Three public workshops were held in October, November, and December 2011 at the Gentile Apartments Community Room and the South End Middle School to develop a vision for the District One plan, discuss potential alternatives, and review and comment on the proposed recommendations. Spanish language outreach materials were provided and translation was available at the meetings. Dozens of interviews and small-group meetings also informed the planning process. Important themes included:

The Vision for District One encompasses the themes of Livability + Sustainability + Inclusion + Opportunity: Partner together to rebuild a more livable, sustainable, inclusive community with the resources to offer expanded opportunities for everyone. District One will encompass two vibrant, walkable, historic urban communities linked by Main Street—Metro Center and the South End—with robust and attractive connections to riverfront. With more destinations of all kinds – retail and business, civic, community, recreation, and entertainment – better connections among them, and a variety of housing options, the South End and Metro Center will offer a high quality of life and attract new residents and visitors.

The Context for Rebuilding: Strengthening Community

- **Enforcement and public safety strategy:** Strengthen partnerships among community stakeholders, police and enforcement staff. Key initiatives should include replication of the C-3 Policing Model successfully implemented in the Brightwood section of the City and replicated in the South Holyoke Safe Neighborhood Initiative.
- **Partnership and coordination strategy:** Retain Rebuild Springfield leadership to coordinate partnerships and implement the rebuilding plan. Key initiatives include ensuring that there is a downtown redevelopment leadership organization with staff; building on the existing BID; engaging an organizer to enhance communication among all groups in the South End; reviving the South End business organization; and holding a volunteer summit of all organizations, agencies and city departments to identify and coordinate priority activities for Americorps/VISTA volunteers assigned to Springfield, as well as college student service activities.

The Resources for Rebuilding: Financing the Plan

- **Financing strategy:** Pursue and package a variety of financing incentives and resources for rebuilding. The Plan includes feasibility testing for sample development types. Under current market conditions, incentives will be needed in the redevelopment and rebuilding process, with complex and layered financing in many cases. The Plan calls for aggressive pursuit of special resources, from a local lending pool to special allocations of disaster-related funding, similar in type to the kinds of resources made available for other disasters, as well as use of existing federal, state, and local incentive programs. Investments will need to be phased over time to assure market absorption.



The Plan calls for owner-occupied infill housing on the side streets of the South End.

The Framework for Rebuilding: Strategies to Rebuild Better

Housing strategy:

- Provide a variety of housing options appropriate to different locations in Metro Center and the South End that enhance downtown and neighborhood character, add market rate housing, and raise the median household income. Key initiatives include a focus on adaptive reuse of existing buildings for rental and condo housing in Metro Center and in larger buildings in the South End; and predominantly one- to three-family owner-occupied housing at or near market rate for infill on the side streets of the South End.

Commercial and retail strategy:

- Create centers of vitality and activity along Main Street by recruiting retail and restaurants to ground floor spaces, office users to upper story space, and neighborhood-serving retail, as well as assisting in the rebuilding of key sites. Key initiatives include rebuilding the Main and Union intersection to be a South End gateway and activity center; reinforcing the cluster of eateries in the South End to form a “restaurant row;” and exploring options for a grocery store or pharmacy.

Community institutions strategy:

- Enhance the anchor role of community institutions, especially by assisting in relocation of those damaged by the tornado. Key initiatives include assisting the South End Community Center in relocating to the Gemini site and Square One in developing new space on Main Street.

Urban character and historic preservation strategy:

- Pursue adaptive reuse of historic buildings and sites and establish urban design guidelines and a regulatory framework to enhance walkability. Key initiatives include adopting urban design guidelines to protect and enhance the public realm and the pedestrian environment; enacting a historic preservation “demolition delay” ordinance; adopting the pending zoning ordinance and potential refinements to reflect this Plan; extending urban renewal district boundaries in order to ensure design review for Main Street and other major streets in District One; and enhancing connections to the riverfront with public art and special treatments for Union Street as a “festival street.”

Public spaces strategy:

- Activate and program public spaces to create destinations, mobilize community partners for stewardship, and connect important public spaces. Key initiatives include potential programs and activities led by community arts and culture groups to attract people to Court Square and other locations; organizing temporary uses, programs and events for empty storefronts; focusing on maintenance and programming for existing parks and open spaces, including the newly redesigned Emerson Wight Park.



Public art like this light installation by Bill FitzGibbons in San Antonio can enhance the underpasses connecting to the riverfront. Source: www.bill-fitzgibbons.com.



Relocation of the South End Community Center to a new building on the Gemini site on Central Street and preservation of the historic Armory building for a residential or office project are both part of the Plan.



Urban design principles in the plan emphasize creating a safe, attractive and interesting environment for pedestrians.

DISTRICT 2 | Maple High/Six Corners, Old Hill, Upper Hill, Forest Park

The neighborhoods of Maple-High / Six Corners, Upper Hill, Old Hill and (northern) Forest Park make up planning District 2, a richly diverse section of Springfield. The contributions of residents and other stakeholders at the three district community meetings and in several other venues were critical in making this a citizen-owned plan. The recommendations that follow come from many sources, but primarily from the input of residents who willingly shared their time, energy and desires over the past several months.

The dialogue in District 2 has been intense and complex, yet hopeful. Many challenges faced District 2 neighborhoods even before the tornado struck: abandoned properties, substandard housing, low home ownership rates, higher than average crime and poverty rates, and low high school graduation rates.

In District 2, perhaps more than anywhere else in the city, there is an opportunity for the rebuilding process to have a transformative effect. The scar of the tornado's path in this part of town revealed the challenges and allowed them to air. What came from these dialogue sessions was a strong commitment to rebuild stronger than before, an engaged community newly energized to improve their community, and recognition of how District 2's vibrant diversity could become the backbone upon which to rebuild.

The following vision emerged from the community's dialogue, and highlights the District's strengths as the foundation for a better future:

Build on strong relationships and neighborhood pride to proactively reinvest in our community. Leverage our balanced diversity and unleash the potential of our historic neighborhoods to create beautiful, safe, and thriving communities. Six guiding principles support and elaborate on this vision:

- Build on the strong commitment and pride in the neighborhoods to support communities and organizations that are connected, engaged, and working together.
- Improve quality of life and provide new opportunities for residents by enhancing the health, safety, and vitality of the community.
- Preserve and promote the history and character of the neighborhoods as an amenity that enriches quality of life and attracts new residents and businesses.
- Achieve a sustainable and equitable balance of owners and renters, incomes, housing types, land uses, employment opportunities and services that meets the needs of residents while positioning the community to thrive and flourish in the future.
- Value the diversity of people, cultures, and activities and recognize this diversity as a source of resilience, creativity, learning, empowerment, and collaboration that strengthens the neighborhoods.



Pride in neighborhood amenities is a key element in keeping residents connected.

- Demonstrate public and personal commitment, improve perceptions, and attract new energy and investment through neighborhoods that are attractive and well-maintained.

From these principles, the planning team derived six “major moves” that together are necessary to achieve the community’s vision supported by more specific initiatives that make up the body of the plan for District 2.

- Transform Housing
- Coordinated Housing Strategy
- New Infill Housing
- Preservation as a Revitalization Tool
- Expand Economic Opportunities
- Job Training and Small Business Support
- Enhanced Neighborhood Businesses
- Promotion and Marketing of the Community
- Invest in Quality Neighborhoods
- Streetscape Improvements
- Reuse of Vacant Lots
- Property Maintenance for Homeowners and Renters
- Safe and Convenient Transit
- Strengthen Community Through Education Institutions
- Quality Schools as Community Anchors
- Strengthened Relationship Between Colleges and Neighborhoods
- Promote Safe and Healthy Living
- Integrated Healthy Food System
- Healthy Lifestyles
- Community Safety
- Build Community Capacity
- Capitalizing on an Engaged Community
- Coordination of Community Services

Undertaking projects will require creative and aggressive financial packaging on a project-by-project basis, taking full advantage of multiple local, state and federal resources. Projects will need to be phased over time to assure full market absorption. There is hope and energy in District 2, and it should be channeled into the implementation of the plan, the next stage of this work. There is room within each of these initiatives, which are explained more deeply within the full report, for every resident and stakeholder to contribute and influence the future outcome of the city.

DISTRICT 3 | East Forest Park, Sixteen Acres

Planning District 3 is comprised of the East Forest Park and Sixteen Acres neighborhoods, relatively stable with a strong sense of neighborhood pride. There were very consistent themes that emerged from the residents and stakeholders of this community during the three district meetings held in late 2011. In addition to



New Infill Housing – Central Street – Before



New Infill Housing – Central Street – After
INFILL HOUSING ON CENTRAL STREET: Central Street is one of the areas most heavily-impacted by the tornado, and includes a concentration of vacant, city-owned, and tornado-damaged lots. There is an opportunity to transform Central Street with new infill housing, streetscape improvements, and community facilities.



Parks & Trails – Mill River – Before



Parks & Trails – Mill River – After
MILL RIVER TRAIL: Improvements along the Mill River could include a new trail that connects the Watershops Armory area to Johnny Appleseed Park, including reforestation, river bank restoration, and recreation and education opportunities along the waterfront.



Residents turned out to share their thoughts in productive working sessions.

significant damage incurred to residential structures and school buildings held dear in the community, there was a particular sense of loss for the once beautiful and rich tree canopy that blanketed the area. While home rebuilding has long since begun in this district, it will take generations for newly planted trees to replace what was lost. There is a strong interest in rebuilding better than before present in this community. While residents value their strong neighborhoods, quality homes, and natural resources, it is clear that better connectivity between these amenities and improved support for healthy vital neighborhoods was desired. As with other Districts, the rebuilding process presents opportunities to strengthen the physical and social connections within the district.

The recommendations that follow come from voices heard in the community meetings, in many smaller and targeted stakeholder meetings, from the online social media site, and from earlier plans created before the storm. Residents are ready to turn the devastation of the tornado into an opportunity to enhance their neighborhoods by way of better homes, schools, parks, greenways, trails and other community assets.

The following vision emerged from District 3 dialogues, revealing consistent themes from already strong neighborhoods, but ones that acknowledged they could be stronger.

Pursue a renewed dedication to a connected and family-friendly community. Rejuvenate our natural character, craft well-designed and efficient homes, and support strong neighborhoods that are anchored by schools, parks, and community facilities of the highest quality. Supporting this vision were five guiding principles that reflect the valued assets in this community, of which there are many.

- Restore and enhance the neighborhoods' natural resources, including trees, water bodies, open spaces, and wildlife, and recognize these resources as amenities that enhance value, improve health, and provide recreational opportunities.
- Promote the family-friendly character of the community through safe, attractive neighborhoods, strong community organizations, quality schools, social gathering spaces, and activities for all ages.
- Focus on schools, parks, and public facilities as community anchors that are integrated into the neighborhood and coordinated to provide efficient, effective services.
- Improve mobility within and between neighborhoods through efforts to reduce congestion, calm traffic, provide enhanced bicycle and pedestrian infrastructure, explore trail opportunities, and enhance streetscapes to support local businesses.
- Strengthen neighborhoods by rebuilding, repairing, and maintaining well-designed homes that are efficient, durable, and comfortable.

From these principles, the planning team derived four major moves and nine key initiatives that make up the body of the plan. They are as follows:

- Restore and Enhance Natural Resources
- Reforestation
- Enhanced Use of Parks and Open Spaces
- Maximize Impact of Schools and Community Facilities
- Quality Schools as Community Anchors
- Branch Library at Dryden Memorial School
- Connect Communities
- Complete Streets
- Youth and Senior Activities
- Communication and Collaboration
- Rebuild Homes to Strengthen Neighborhoods
- Quality Homes
- Aggressive Maintenance and Repair Assistance

Residents of District 3 have demonstrated sturdiness and resolve in response to the tornado. It is this same work ethic and steadfastness that were the early foundation of these neighborhoods that will also fulfill their desire to create an even stronger future. For now, the destruction to schools, parks, homes and trees in East Forest Park and Sixteen Acres may still seem overwhelming. This is offset by the sound of hammers in the neighborhood and the newly revealed views of parks and water features long hidden. As in the other neighborhoods, both residents and city leaders must remain steadfast in their commitment to implementing the plan. There is plenty to do; all should be engaged – from the oldest who remember the early days of this community to the youngest whose future will be shaped by this rebuilding effort.

CONCLUSION

The Rebuild Springfield planning process has sparked a renewed sense of energy and ownership in the city’s future across neighborhoods, constituents, organizations, and public and private leadership. There are numerous opportunities for everyone to contribute to implementing recommendations. The Rebuild Springfield Plan is not any one individual, administration, or organization’s responsibility; it belongs to the citizens, businesses, and organizations of Springfield, all of whom have a role in seeing it through.

The key to successful implementation over time is continuous participation across all sectors, affording anyone and everyone the opportunity to participate in and benefit from the process and outcomes. Communication and transparency will assure this kind of success. DevelopSpringfield and the Springfield Redevelopment Authority are committed to facilitating ongoing opportunities for everyone to own a piece of this plan to make the City of Springfield bigger, better and stronger for generations to come.

Continue to visit the Rebuild Springfield website to stay connected at www.rebuildspringfield.com



Complete Streets – Trail – Before & After
COMPLETE STREETS: District 3 residents identified the need for sidewalks and bicycle lanes along key streets in the tornado-impacted areas. Sidewalks and bicycle lanes can help to connect neighborhoods, provide mobility options, and increase safety.

INTERCONNECTED TRAIL AND GREENWAY SYSTEM: Parks, greenways, and natural areas were heavily impacted by the June 1st tornado. As these areas are reforested and restored, there is an opportunity to create an interconnected trail and greenway system with enhanced recreation options that links parks, community facilities, and other destinations.

Interconnected Greenway and Trail System

