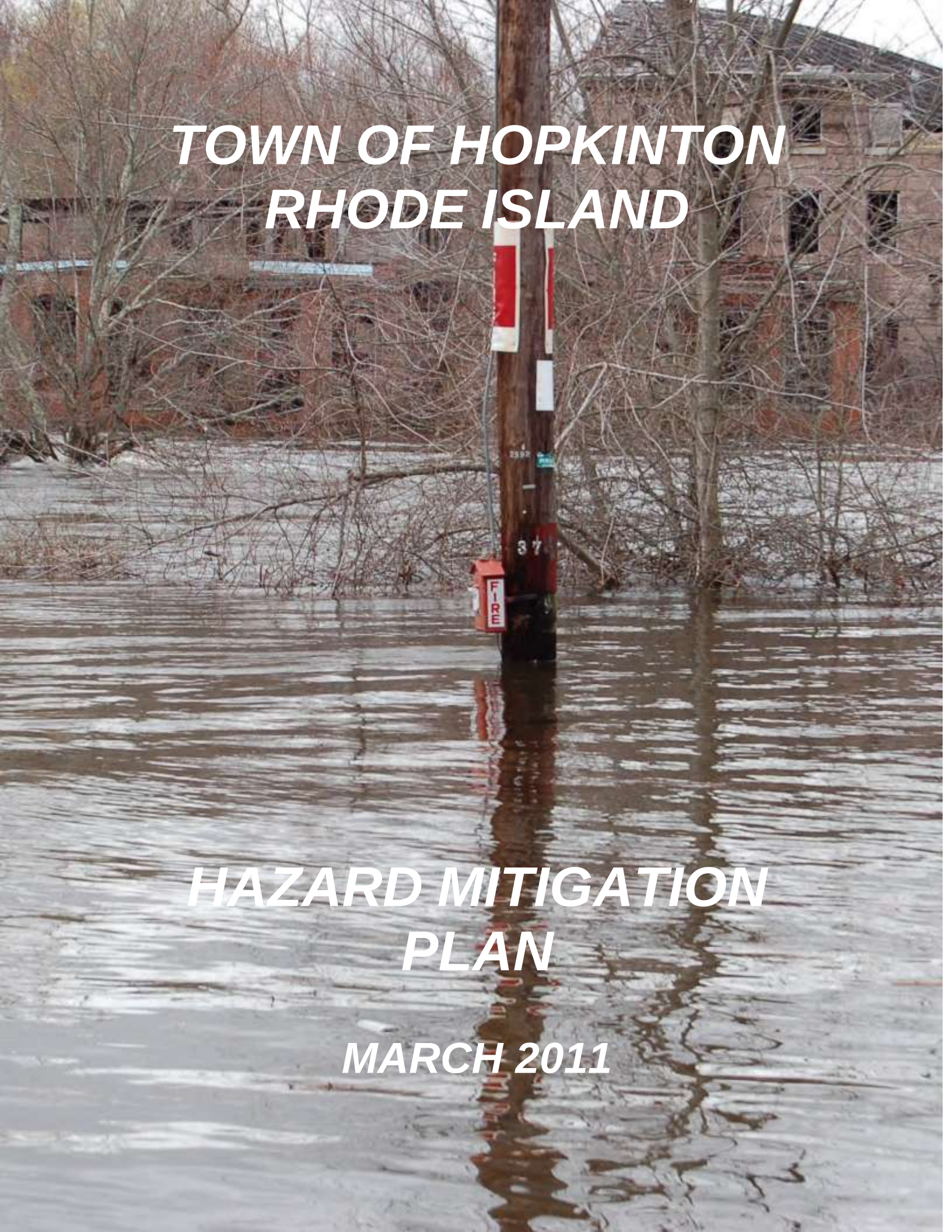

TOWN OF HOPKINTON
RHODE ISLAND

HAZARD MITIGATION PLAN

MARCH 2011

Certificate of Adoption

TOWN OF HOPKINTON, RI HOPKINTON HAZARD MITIGATION PLAN

RESOLVED: That the Hopkinton Town Council expresses support and approval to the Hopkinton Hazard Mitigation Plan to be submitted to the Federal Emergency Management Agency (FEMA).

Formally adopted by the Hopkinton Town Council on the seventeenth day of September 2012.

ATTEST: Elizabeth J. Cook-Martin
Town Clerk

President, Hopkinton Town Council

Hopkinton Hazard Mitigation Committee Approval

The Hazard Mitigation Committee of the Town of Hopkinton does hereby approve this Edition of the Hopkinton Hazard Mitigation Plan on this day April 4, 2011.

Michael T. Octeau
Chairman/ Hopkinton Emergency Management Director

Sylvia Thompson
Hopkinton Town Council President

William McGarry
Hopkinton Town Manager

John Scuncio
Hopkinton Police Department, Chief

Timothy Tefft
Hopkinton Public Works, Director

James Lamphere
Hopkinton Town Planner

Brad Ward
Hopkinton Building/ Zoning Official

Michael Williams
Ashaway Volunteer Fire Association, Chief

Frederick Stanley
Hope Valley Wyoming Fire District, Chief

Matt Desmarais
Hopkinton GIS Director

Hopkinton Hazard Mitigation Committee Approval

NAME	DATE
Ronald MacDonald III Hopkinton Emergency Management Director	9/12/2012
Sylvia Thompson Hopkinton Town Council President	9/13/12
William McGarry	7/6.12
David Palmer Hopkinton alice Department, Chief	9-7-12
Timothy efft Hopkinton Public Works, Director	9/6/12
Hor:>kinton Town Planner	9-6-12
Brad Ward /91'Jkint n uil ,ng/ Zoning Official	r-6 -12-
Michael Williams Ashaway Volunteer Fire Association, Chief	q))(Ot)_
Frederick Stanley Hope Valley Wyoming Fire District, Chief	09/11/12
Matt Desmarais Hopkinton GIS Director	9/7/2012

HOPKINTON HAZARD MITIGATION PLAN
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HOPKINTON HAZARD MITIGATION PLAN
CHAPTER 1- INTRODUCTION

Why Mitigate?

Tsunamis. Floods. Fires. Earthquakes. It seems as though every time one turns on the television or reads the newspaper, there is a story about a natural disaster that kills thousands of people or destroys billions of dollars worth of property. In the year 2004 alone, there were hurricanes that battered Florida, tsunamis that devastated Asia, and volcanic activity in Washington State. To date, the 2004 Florida hurricanes cost billions of dollars and 171 lives were lost. The Tsunami of '04 has claimed 178,000+ lives and repair costs are already in the hundreds of billions. Hurricane Katrina in August of 2005 killed over 1800 people and cost over 81 billion dollars. These monetary figures are only a snapshot of the current day totals. The costs actually continue to accrue long after the disaster has come and gone. The effects of the lives lost will continue forever.

What Natural Disasters Really Cost

The taxpayer bears the brunt of costs when it comes to disaster damage recovery, and these costs continually rise as the years progress. From 1989 thru 1993, the costs for natural disasters were an average of 3.3 billion dollars nationwide. In the next four years, 1994 through 1998, that average figure quadrupled to over 13 billion annually. Recovery costs continue to compound due to a number of factors. The costs of rebuilding increase as time passes after an incident. This is due in part to yearly labor cost increases; supply cost increases and shortages, and debris removal issues. Some costs are difficult to calculate. For example, the loss a business incurs when much of its customer base is unable to make purchases.

Everyone ends up paying for disasters regardless of whether it occurred in their home or not. Taxpayers pay each year to offset the costs of disasters around the country. Insurance costs go up for all parties when a disaster forces an insurance company to pay billions in losses to those they underwrite. Some insurance companies are forced to close following major loss disasters. Volunteer service agencies are often overtaxed during disasters forcing them to cut services they normally provide and to seek increased donations to stay in operation.

In addition, over 6000 people were killed and 50,000 persons were injured by natural disasters in the last 25 years. It is impossible to place a monetary value on lost family members or suffering that is felt by those left behind. Those persons that are injured cannot get back the time that was lost following an injury and often, some never return to normal life due to debilitating injury.

The truth is that while some disaster related costs may never be able to be calculated, there are many actual costs that are. We can't always prevent the occurrence of natural disaster, but we certainly can lessen the costs of these events. To do this, we use Hazard Mitigation Planning.

What is Hazard Mitigation Planning?

Natural hazard mitigation planning is the process of figuring out how to reduce or eliminate the loss of life and property damage resulting from natural hazards such as floods, earthquakes, and tornadoes. The process is simple. First, organize a committee and gather the resources needed to complete the planning process. Next, the committee needs to assess the risk that could potentially affect Hopkinton. The committee needs to identify the characteristics and potential consequences of natural hazards. It is important to understand how much of the community can be affected by specific hazards and what the impacts would be on important community assets. Then, after all of the needed information has been compiled, the committee determines what the priorities should be and then looks at possible ways to avoid or minimize the undesired effects of natural hazards. The end result is a natural hazard mitigation plan and strategy that is ready for citizen and town council approval. Finally, after the approval process, the plan is ready for implementation and monitoring. Projects that are outlined in the plan can be completed and an ongoing process for update and monitoring can be utilized. The most crucial part of the hazard mitigation process is that government, response agencies, town business owners and the public alike have an equal say as to the development of the plan and frequent opportunities to participate in the entire planning process. Everyone in Hopkinton is a stakeholder in Hazard Mitigation.

HOPKINTON HAZARD MITIGATION PLAN
CHAPTER 2 – COMMITTEE FORMATION AND GOALS

Committee Formation

On October 31, 2003, Hopkinton Emergency Management Director Michael T. Octeau, called upon a number of Hopkinton Officials to meet at Town Hall and assist in the formation of the Town's first Hazard Mitigation Committee. Joseph Almeida Jr., Rhode Island Hazard Mitigation Officer and Pamela Pogue, the Rhode Island State Floodplain Coordinator also attended the meeting. Mr. Almeida and Ms. Pogue both spent a great deal of time explaining the entire hazard mitigation process and outlined the benefits of having a working Hazard Mitigation Plan. Both Almeida and Pogue stressed how a town developed plan rather than a prepackaged consultant plan was better for Hopkinton as all of the stakeholders would have a chance to assist in creating something that truly protected their town. They noted that consultants were available to complete the mitigation plan for a cost, but without town participation that type of plan would most assuredly fail. All in attendance felt that a Town Committee should be formed and all plan development work should stay in-house.

At that time the following members were assigned to the team:

Michael T. Octeau - Hopkinton Emergency Management Director
Frederick A. Stanley – Hope Valley Wyoming Fire District Chief
Michael L. Williams – Ashaway Volunteer Fire Association Chief
Jason Pezzullo – Hopkinton Town Planner
Eric Strahl – Hopkinton Town Manager
Charles Niles – Hopkinton Public Works Director
Charles Mauti – Hopkinton Building Official
Michael Gilman – Hopkinton Police Department Lieutenant
Linda DiOrio – Hopkinton Town Council President.

On November 17, 2003, the Hopkinton Town Council approved these nine persons to be members of the Hopkinton Hazard Mitigation Committee. Also stated was that citizens and members of the Hopkinton Business Community were welcome to become members of the committee.

Several members of the community were approached and asked to become members of the committee. Due to time and other constraints, most of these persons declined the opportunity to participate. In fact, only one Hopkinton businessman agreed to join the committee, Ernest Belasco, President of Wood River Health Services Inc. in March of 2004.

2010 Plan Update and Revision

Due to requirements set forth by the Rhode Island Emergency Management Agency and the Federal Emergency Management Agency (Disaster Mitigation Act of 2000), local multi-hazard mitigation plans must be completely updated every 5 years. While Hopkinton's plan was never formally adopted by FEMA or RIEMA when it was originally completed, Town officials decided that with guidance from FEMA, work would be done to bring Hopkinton's plan into full compliance.

On June 21, a planning meeting was held at the Hopkinton Planning office. The meeting was attended by Town Manager William McGarry, Town Planner James Lamphere and Mitigation Committee Chairman /Emergency Management Director Michael Octeau. Chairman Octeau briefed the Town Manager and Planner on the process that was taken to create the initial plan and the steps that would be needed to update it and bring it into full compliance. The consensus of the group was that Octeau would work with FEMA to determine the appropriate changes that would be needed, rework the current plan, and present the changes to the full committee.

2010 Hopkinton Hazard Mitigation Plan Committee

Michael T. Octeau - Hopkinton Emergency Management Director
Frederick A. Stanley – Hope Valley Wyoming Fire District Chief
Michael L. Williams – Ashaway Volunteer Fire Association Chief
James Lamp here – Hopkinton Town Planner
William McGarry – Hopkinton Town Manager
Douglas Reese – Hopkinton Public Works Director
Brad Ward – Hopkinton Building Official / NFIP Coordinator
John Scuncio – Hopkinton Police Department Chief
Sylvia Thompson – Hopkinton Town Council President
Matt Desmarais – Hopkinton GIS Director

Hopkinton Hazard Mitigation Committee Goals

The goals of the Hopkinton Hazard Committee are as follows:

1. Protect life
2. Protect property
3. Ensure a rapid recovery process following natural disaster
4. Ensure that Hopkinton businesses are also able to rapidly recover following a disaster.
5. Protect critical infrastructure

6. Establish and Maintain a Hazard Mitigation Committee that not only develops a strategy for mitigation but also assures that the strategy changes as needed and routinely maintains the Hopkinton Hazard Mitigation Plan.

Mission Statement

The Hopkinton Hazard Mitigation Committee vows to continue to work together as one to develop and maintain strategies that protect all of the citizens, businesses and property from the damaging effects of natural disasters within the Town of Hopkinton

CHAPTER 3 – HOPKINTON, RHODE ISLAND

When developing the Hazard Mitigation Plan, it was important that the committee take an overall look at Hopkinton and use this overview to develop strategies that match the unique character of the town. The committee studied the current situation in Hopkinton and this chapter describes these findings.

Town of Hopkinton – General Information

Hopkinton is a picturesque town located in Washington County, Rhode Island. It is made up of the unincorporated towns of Ashaway, Hope Valley, Hopkinton City and Rockville. In addition, the eastern part of town, adjacent to Alton is known by locals as the Burdickville section and the southeastern portion of town is known as the Bradford section due to the close proximity to Bradford of Westerly and the sharing of the Bradford Zip Code. Hopkinton is a primarily rural community that is bordered by the Town of Westerly to the south, Exeter to the north, Charlestown and Richmond to the east, North Stonington and Voluntown, Connecticut to the west.

The total square mileage of Hopkinton is 44.1 square miles (114.3 kilometers). Of those, 43.0 square miles (111.3 km.) are land and 1.1 square miles (3.0 km) are water based. The total water percentage of Hopkinton is 2.58 %.

A large majority of the land in Hopkinton is undeveloped forest or wooded areas. The Rhode Island Department of Environmental Management states that a majority of Rhode Island forests are made up of primarily oak and hickory type woods statewide. Other woods included are maple, birch, ash, and eastern white pine. In Southern Rhode Island, the typical forest makeup is historically eastern white pine with maple/ash within, showing a transition to the more common oak forest as one progresses northward. This observation is factual and is obviously part of what makes Hopkinton such a draw to those seeking its rural, wooded character.

An Abridged History of Hopkinton

Hopkinton was established in 1669, as part of the Town of Westerly. However, after the people petitioned the General Assembly to divide it, citing hardships of locals getting to the town meetings, the Town incorporated on March 14, 1757. Hopkinton was named in honor of Stephen Hopkins, who was, at the time, the Governor of Rhode Island and a signer of the Declaration of Independence.

In the years prior to its independence, the Hopkinton side of the Pawcatuck River was the religious, business, and civic center of Westerly. Even earlier, the entire Misquamicut Region located in the southwestern part of what was then Narragansett County was inhabited by Indian Tribes. Today there is evidence of the former presence of Native Americans thousands of years ago in Hopkinton. The Indian Rock shelters, Indian Signal Rocks, and numerous other artifacts found in the area prove this theory. At the point where Hopkinton, Richmond and Westerly crossed paths, stood the first Meeting House in Southern Rhode Island, built by the Seventh Day Baptists in 1680. One member of the church was Samuel Ward, a one time Governor of Rhode Island who later joined in the founding of Brown University.

As years passed Hopkinton continued to flourish and grow due to the great number of rivers and lakes that are strategically located throughout town. A great number of manufacturing mills and businesses prospered in the mid 1800's through the 1900's as a result of this fact. Even a short-line railroad operated in the late 1800's through the late 1940's in support the many businesses of Hope Valley and Wyoming. To date, the Ashaway Line and Twine Mfg. Company is currently one of only a handful of waterside mills still in operation in the country. In 1939, they placed the first commercial product made of nylon on the market, the Ashaway Nylon Bait Casting Line. Riverside location was also an attraction for Camp Yawgoog in Rockville. Yawgoog remains as the nation's oldest and one the largest Boy Scouts of America campgrounds, with thousands of boys attending it each year for almost a century.

Demographics

As of the 2000 United States Census Information, there are 7836 persons residing in the Town of Hopkinton. There are also 2965 households and 2182 families residing within the town. The population density of Hopkinton is 182.3 persons per square mile (70.4 km). There are 3112 housing units at an average density of 72.4 per square mile. The racial make-up of the town is 96.82 % white, .61% African Americans, .89% Native American, .43 % Asian, and 0.00% are Pacific Islander. In addition, .27% are from other races, .97% come from 2 or more races and 1.06 % are Hispanic or Latino of any race.

There are 2965 households of which 35.2% have children under the age of 18 living with them. 61.9% are married couples living together. 7.7% have a female householder with no husband present, while 26.4 %of these households are non-families. 21% of all households are made up of individuals and 9.4% have someone living alone who is 65 years of age or older. The average household size is 2.64 persons and the average family size is 3.07 persons.

Within the town, the population is spread out with 25.7% of the population under the age of 18, 6.4% between the ages of 18-24, 31.6% between the ages of 25 to 44 years of age, 25.4% are between the ages of 45-64 years and 11.1% are 65 years or older. The town's median age is 38 years old. For every 100 females, 18 and older, there are 96.9 males.

The median household income in Hopkinton is $52,181 and the median for a family is $59,143. Males in Hopkinton have a median income of $39,804 versus $29,189 for females. The per capita income for the Town is $23,835. 4.8% of the population and 3.3% of the families are below the poverty line. Out of the total population, 5.5% of those under the age of 18 and 7.2% of those aged 65 and older are living below the poverty line.

Town Government and Services

Hopkinton is the typical small New England town when it comes to government. Even before Hopkinton's founding, residents prided themselves on being active

participants in the local political process. Hopkinton is governed mainly by a Council based government made up of five members. Of these council members, one is elected to the Council President position and one is elected to the Council Vice President position. The Town Council President is the Chief Elected Official for the Town Of Hopkinton. In addition, a Town Manager is appointed by and serves at the pleasure of the Town Council. The Town Manager is responsible for the day-to-day operations of the Town and serves as the personnel director for all of the Town Departments. The Town Manager also is a member of the Hopkinton Hazard Mitigation Committee.

Within town government, there are several departments that provide services to the town. The Town Clerk is an elected official located at the Town Hall and responsible for all the town's recordkeeping, elections and licensing. Also located at the Town Hall are the offices of the Tax Assessor and the Tax Collector. The Tax Assessor is responsible for all assessments and abatements of taxes in Hopkinton .All tax billings and payments are processed by the Tax Collector Office. Additionally, there is an office for the Hopkinton GIS (Geographic Information System) and IT (Information Technology) coordinator. The GIS/IT coordinator is responsible for maintaining and updating all of the town computer hardware and software, maintaining the town website and managing the town GIS services.

Within the Thayer House on Main St, (next door to the Town Hall) are the offices of the Town Finance Officer and the Hopkinton Planner. Accounts payables, receivables and payroll are processed in the finance office. The town planner oversees the potential growth and development of the Hopkinton Business and residential communities and insures healthy as well as compliant growth.

The Hopkinton Police Department consists of a Chief, a Lieutenant, two Sergeants and 9 patrol officers as well as a Detective, Juvenile Officer and Community Police Officer. The Department operates twenty-four hours a day and responds to all criminal complaints and town-wide emergencies. The Department moved into its new headquarters building on Woodville Rd. in January 2004, a facility that provides for more efficient operations and also houses the Police Dispatch Center as well as the Primary EOC and Emergency Management Office.

The Hopkinton Emergency Management Agency is currently staffed by a part-time Director. The Director acts as the day-to-day liaison between the Town Council and the Town's emergency service providers and acts as an advisor on all emergency related affairs in Hopkinton. The Emergency Management Director is responsible for all emergency planning and is the Chairman of the Hopkinton Hazard Mitigation Committee.

The Public Works facility is located across from the Police headquarters on Woodville Rd. This property houses all of the town's maintenance equipment,

vehicle repair facilities, sand and salt storage, fueling facilities and the Animal Control building. The Town Building/Zoning official is also located within the DPW building. The Building/ Zoning Official is responsible for issuing all building permits, permit inspections and code enforcement as well as being the town's National Flood Insurance Program Coordinator.

The Town Recreation Department is located at the Crandall House on Main St. in Ashaway. This Department is responsible for all youth recreation programs as well as the Senior Food Program and upkeep of the playgrounds and sports fields.

Fire Protection in Hopkinton

Hopkinton businesses and residents are protected from fires and other emergencies by two separate departments. These volunteer departments provide quality protection to the Hopkinton and in fact have both earned a coveted ISO class 4 fire protection rating, a rarity among rural fire departments without municipal hydrant systems.

The Ashaway area is protected by the Ashaway Fire District. The District is a separate taxing authority that supports the firefighters and equipment of the Ashaway Volunteer Fire Association. The Fire Association responds to all areas within its district with 2 engines, 1 tanker, 1 heavy rescue, 1 brush truck and 2 boats. The department also provides mutual aid support to the Hope Valley-Wyoming Fire District in Hopkinton as well as any other areas that may request assistance.

The Hope Valley Wyoming Fire District provides fire and emergency services to the northern segment of Hopkinton. Also a separate taxing district, Hope Valley provides protection not only to the Hope Valley and Rockville areas in Hopkinton but to the Wyoming and Alton sections of Richmond, Rhode Island besides. The Department operates 3 engines, 1 ladder, 2 tankers, 1 heavy rescue and a hazardous materials team. Hope Valley also participates in the Rhode Island Mutual Aid Pact.

Emergency Medical Services in Hopkinton

Two Emergency Medical Providers service the residents and visitors of Hopkinton. The Ashaway Ambulance Association and Hope Valley Ambulance Squad provide service to their respective communities. Medical emergencies in both areas are covered by volunteer, call and paid Emergency Medical Technicians that render Advanced Life Support techniques to the sick and

injured. The Hope Valley Ambulance operates 3 Advanced Life Support transport vehicles and provides 24 hour service to not only the Hope Valley and Rockville areas but also to the entire Town of Richmond. The department also operates a Squad type pickup vehicle that tows the Department's Mass Casualty response trailer, a state homeland security resource. The Ashaway Ambulance Association responds to all emergencies in the southern section of Hopkinton and utilizes 2 Advanced Life Support Transport Vehicles. Both Departments are funded solely through donations, grants, and third party billing.

Climate and Weather Patterns

No official National Weather Service climate history exists for Hopkinton, as there is not a NOAA approved monitoring device in town. However, due to the relatively small size of Rhode Island, one can assume that official data that is available for other nearby areas of Rhode Island will be pertinent to Hopkinton as well. Providence data is the basis for this climate report.

The proximity to Narragansett Bay and the Atlantic Ocean play a major part in the climate of Rhode Island. In the winter, many major snowstorms frequently turn to rain long before reaching the area. In the summer, cool ocean breezes turn uncomfortably warm days into bearable ones. Dense fog can be produced offshore and brought inland by these breezes. During the fall, coastal storms of tropical origin can bring damaging winds to our area. Coastal storms usually produce the greatest amount of weather related damage, year round.

The average temperatures in Rhode Island range from around 50 degrees with 70 degree days common from the end of May through September. Several days with temperatures reaching 90 degrees or more may be experienced during this time. It is rare to experience temperatures of 100 degrees or greater.

Rhode Island generally experiences about 125 days a year of freezing temperatures. They become a common occurrence towards the end of November and become less frequent near the end of March. The average date for the last freeze in spring is usually around mid-April while the average date of first freeze is mid-October. This makes the growing season about 195 days in length.

Measurable precipitation occurs on about one day out of every three and is fairly distributed throughout the year. There is usually no definite dry season, but occasionally droughts do occur.

Between May and August, thunderstorms account for most of the precipitation. They usually produce heavy and sometimes excessive amounts of rainfall but because the duration of these storms is short, the damage produced is often

light. Summer thunderstorms are often accompanied by strong, damaging winds resulting in property damage.

The first measurable snowfall of winter usually comes toward the end of November and the last storm is usually in late March. Winters with storm snow totals of over 50 inches are not common. The average normal snowfall total is about 25 inches. February is usually the snowiest month of all but January and March run close seconds. It is unusual for snow to remain on the ground for any length of time.

In Hopkinton, the closeness of the Atlantic Ocean tends to slightly change our weather. Normal temperatures are usually about 5 degrees cooler in the warmer months and a few degrees warmer in the winter. Snow totals are usually much lower in Hopkinton compared to Providence and North especially in the southern end of town.

Camp Yawgoog

HOPKINTON HAZARD MITIGATION PLAN
CHAPTER 4 – HAZARD IDENTIFICATION

It was essential that the hazard mitigation committee look at all of the potential hazards that could befall Hopkinton in an effort to plan for actual disaster. In Rhode Island, Hopkinton is somewhat unique in that there are relatively few actual disasters that have occurred in past years. The major storms that did occur did not create widespread destruction, injuries or fatalities. Therefore, very little if any media attention was given to these events. This fact made it slightly difficult to gather past occurrence information. However, some of these events were covered in other localities near or adjacent to Hopkinton. Information of this nature is included in this section.

In addition to actual event information, the committee used two other methods to determine the hazards. The best way we found to determine hazards was to go through a list of potential hazards, one by one, and discuss probabilities based on experiences with types of hazards and to share stories of events that our friends or relatives had experienced. While this was not always the most scientific of methods, it was determined that this would most likely lead the committee to the most probable hazards. The committee also used some technical data and hazard charts to gather hazard information.

Hopkinton's Natural Hazards

The Hopkinton Hazard Mitigation Committee has determined that the following hazards will be addressed in this plan:

- Coastal Storms and Tropical Cyclones
- Dam failure
- Drought
- Earthquake
- Extreme heat
- Flood
- Hailstorm
- Severe Thunderstorm
- Severe winter storm
- Tornado
- Wildfire
- Windstorm

While this list is not exhaustive of all of the types of natural hazards, it includes the ones that have the greatest potential for occurrence. In addition, technological hazards are not listed in this particular version of the plan but may be added to a hazard assessment in future years.

The Hazards and Their Potential Effects on Hopkinton

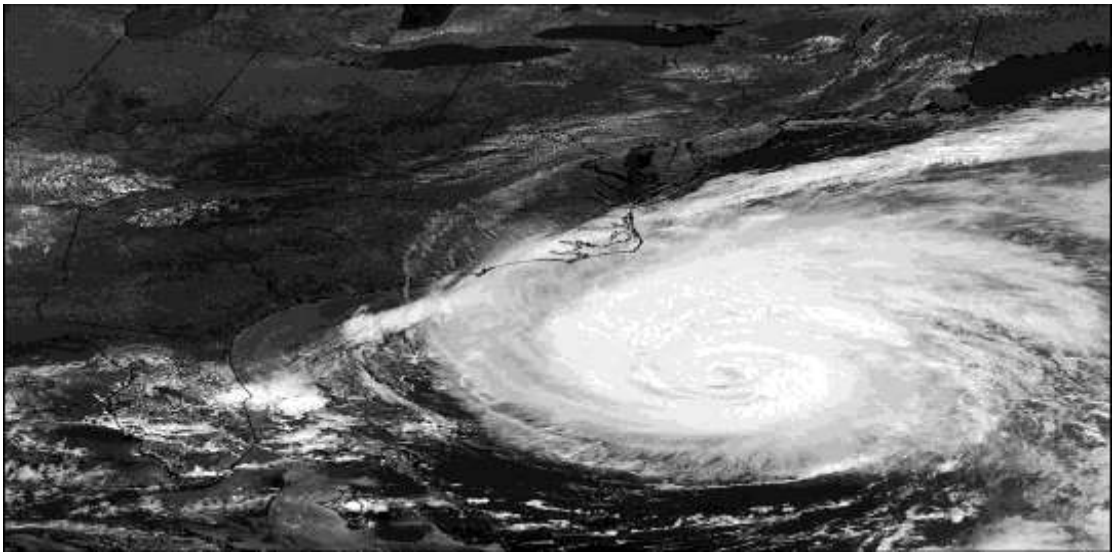
Coastal Storms and Hurricanes

What is a Coastal Storm?

A coastal storm can cause increases in tidal elevations (called storm surge), wind speed, and erosion, caused by both extratropical events and tropical cyclones.

Extratropical events include Nor'easters and severe winter low pressure systems. Both the east and west coasts can experience these no tropical storms that can produce gale force winds an precipitation in the form of heavy rain or snow. These cyclonic storms, commonly called nor'easters on the east coast because of the direction of the storm winds, can last for several days and can be very large – 1000 mile wide storms are not uncommon.

A tropical cyclone is a generic term for a cyclonic, low pressure system over tropical or sub-tropical waters. Tropical cyclones with maximum sustained winds of less than 39mph are called tropical depressions. A tropical storm is a cyclone with maximum sustained winds greater than 39 mph and less than 74 mph, and hurricanes are intense tropical weather systems with maximum sustained winds of greater than 74 mph or higher that develop over the north Atlantic ocean, northeast Pacific Ocean or the south Pacific Ocean east of 160 E longitude



What is a Hurricane?

A hurricane is a category of tropical cyclone characterized by thunderstorms and defined surface wind circulation. Hurricanes develop over warm waters ad are caused by the atmospheric instability created by the collision of warm air with cooler air. Hurricane winds blow in a large spiral around a calm center called the eye, which can be 20-30 miles wide. When a hurricane nears land, it may bring torrential rains, high winds, storm surges, coastal flooding, inland flooding and sometimes, tornadoes. A single hurricane can last for more than two weeks over water and can extend outward 400 miles. The Hurricane Season for the Atlantic Coast is June 1 to November 30. On average, five hurricanes strike the United States every year. In a two year period, an average of three significant (category 3 or higher on the Saffir –Simpson Scale) hurricanes will strike the United States. Duration depends on the forward motion of the storm and the availability of warm water source for energy.

Some hurricanes are characterized primarily by water – a rainy or wet hurricane – while others are primarily characterized by wind – a windy or dry hurricane. Wet hurricanes can flood both coastal and inland areas, even as the storm dissipates in wind strength, while windy hurricanes primarily affect coastal areas with their high winds and storm surge.

Because hurricanes are large, moving storm systems, they can easily affect entire states or entire coastlines. Not only will coastal development be affected, but also areas far inland can suffer direct impacts from hurricanes and tropical storms

Coastal storms and hurricanes have a long and checkered past in New England weather history. While New England and Rhode Island together have not realized a great frequency of named hurricanes in past years, that is not the case with extra tropical storms. Each year, nor'easters and severe winter low-pressure systems threaten all areas of Rhode Island. These storms can have considerable strength that can affect both coastal and inland areas alike. During the winter months, Nor'easters can contain blizzard conditions that can clog roadways and interrupt electrical service for extended periods of time.

On January 22, 2005, a wintertime nor'easter type storm struck the New England area with snow totals nearing 3 ft and winds of almost 50 mph; the storm was listed as the 2nd worst winter storm in Rhode Island history. While Rhode Island was placed under a State of Emergency on Sunday January 23, 2005, the impact to Hopkinton was minimal. A few short, small scale power outages and minor motor vehicle accidents were reported as well as an official snow total of 21 inches.

On April 1, 1997 a nor'easter, dubbed the "April Fools Storm" stuck Rhode Island and had a moderate impact on Hopkinton. The early spring storm caught much of the region by surprise and took a few days to be completely cleaned up. In Hopkinton, the storm downed many trees, left the police headquarters without power for more than 5 hours, and downed many portions of the Ashaway Fire Department's fire alarm system Eight inches of wet snow and high winds were recorded at the weather service.

Tropical cyclone activity in Hopkinton is not all that uncommon. As was stated before, Rhode Islanders have not experienced a great number of named hurricanes. Occasionally though, both tropical storms, and low category hurricanes make their way up the coast and strike our area.

On July 14, 1996, Tropical storm Bertha buffeted the area with 40 mph winds and heavy rain. The storm downed two large trees and cause power outages in Hopkinton. The Imperial Wall Coverings plant on Chase Hill Rd. experienced a small fire in the building that caused minor damage and the evacuation of about 40 employees. In Washington County, small tornadoes were reported to the National Weather Service.

As for hurricane activity, when a storm strikes Rhode Island, all of the cities and towns feel the effects, including Hopkinton. Local hurricane experts David Vallee and Michael Dion list many of the Storms that impacted Rhode Island in his report entitled *Southern New England Tropical Storms and Hurricanes – A Ninety Seven Year Summary, 1900-1996, Including Several Early American Hurricanes.* Figure 4-2 shows the storm dates and category numbers if available.

Saffir-Simpson Hurricane Index

Category	Wind Speed	Storm Surge (feet above normal sea level)	Expected Damage
1	74- 95 mph	4-5 ft	**Minimal:** Damage is done primarily to shrubbery and trees, unanchored mobile homes are damaged, some signs are damaged, no real damage is done to structures
2	96-110 mph	6-8 ft.	**Moderate:** Some trees are toppled, some roof coverings are damaged, major damage is done to mobile homes
3	111-130 mph	9-12 ft.	**Extensive:** Large trees are toppled, some structural damage is done to roofs, mobile homes are destroyed, structural damage is done to small homes and utility buildings
4	131-155 mph	13-18 ft.	**Extreme:** Extensive damage is done to roofs, windows and doors; roof systems on small buildings completely fail; some curtain walls fall.
5	> 155 mph	> 18 ft	**Catastrophic:** Roof damage is considerable and widespread, window and door damage is severe, there are extensive glass failures, and entire buildings could fail

FIGURE 4-1

Tropical Cyclone Classification	
Tropical Depression	**20-34 kts.**
Tropical Storm	**35-63 kts.**

Year	Month	Day	Category	Year	Month	Day	Category
1635	Aug	25	N/A	1821	Sept	3	N/A
1924	Aug	26	2	1938	Sept	21	3
1940	Sept	2	1	1944	Sept	14-15	3
1950	Aug	20	2	1954	Aug	31	3
1954	Sept	11	3	1955	Aug	12-14	TS
1955	Aug	18-20	TS	1960	Sept	12	2
1961	Sept	14	TS	1961	Sept	20-25	3
1976	Aug	9-10	1	1985	Sept	24	TS
1985	Sept	27	2	1991	Aug	19	2
1996	July	12-14	TS	1997	July	25/26	TS

FIGURE 4-2

Dam Failure

Damage to Main St. following Failure of Blue Pond Dam – March 2010

The purpose of a dam is to store water, wastewater or liquid borne materials for any of several reasons; e.g. flood control, irrigation, human water supply, livestock water supply, energy generation, recreation or pollution control. Many dams fulfill a combination of many of the above examples. There are many different types of dams. The most commonly found are embankment dams and concrete dams.

Many dams are privately owned, both in the United States and in Hopkinton. The majority of these owners are conscientious and their dams are well maintained but every year, some dams fail. There are several reasons that dams fail. Some of these reasons are:

- Overtopping – caused by water spilling over the top of a dam
- Structural failure of the materials that construct the dam
- Stability failure of the foundation or other features that hold the dam in place
- Cracking caused by movements like the natural settling of a dam
- Inadequate maintenance and upkeep
- Piping – when seeping through a dam is not properly filtered and soil particles continue to progress and form sink hole in the dam

In past years, much attention has been given to the failures of both private and municipally owned dams. Most of these dams are in serious need of repair and upkeep but until recently, no funding was available. Three years ago, after a dam

failure in South Kingstown, the Rhode Island Department of Environmental Management performed safety inspections on most of the Rhode Island dams. Hopkinton did not have any dams that were in the High Risk classification but did have numerous ones in the significant risk category. If a failure of any of these dams were to occur, major localized flooding, localized property damage and isolated deaths could occur. The State has placed priority on high risk dams and will then repair significant risk dams next. A list of all of Hopkinton's dams is located in Appendix 2 of this plan.

Drought

Drought is a normal, recurrent feature of climate, although many erroneously consider it a rare and random event. It occurs in virtually all climatic zones, but its characteristics vary significantly from one region to another. Drought is a temporary aberration; it differs from aridity, which is restricted to low rainfall regions and is a permanent feature of climate. Drought is a natural hazard that evolves over months or even years, affects a specific area or an entire spatial region, and causes little structural damage. Generally, a drought can be defined as a continuous period of time in which rainfall is significantly below the norm for a particular area. This period of time could be as short as one summer, or as long as several years. Although the State of Rhode Island is often considered a "water-rich" state, it can experience extended periods of dry weather, from single season events to multi-year events such the long-term drought of the mid-1960s.

Drought is a subtle hazard of nature. Although it has scores of definitions, it originates from a deficiency of precipitation over an extended period of time, usually a season or more. This deficiency results in a water shortage for some activity, group, or environmental sector. Drought should be considered relative to some long-term average condition of balance between precipitation and evapotranspiration (i.e., evaporation + transpiration) in a particular area, a condition often perceived as "normal". It is also related to the timing (i.e., principal season of occurrence, delays in the start of the rainy season, occurrence of rains in relation to principal crop growth stages) and the effectiveness (i.e., rainfall intensity, number of rainfall events) of the rains. Other climatic factors such as high temperature,

high wind, and low relative humidity are often associated with it in many regions of the world and can significantly aggravate its severity.

Drought should not be viewed as merely a physical phenomenon or natural event. Its impacts on society result from the interplay between a natural event (less precipitation than expected resulting from natural climatic variability) and the demand people place on water supply. Human beings often exacerbate the impact of drought. Recent droughts in both developing and developed countries and the resulting economic and environmental impacts and personal hardships have underscored the vulnerability of all societies to this "natural" hazard.

Drought Definitions

Conceptual Definitions of Drought - Conceptual definitions, formulated in general terms, help people understand the concept of drought. For example: Drought is a protracted period of deficient precipitation resulting in extensive damage to crops, resulting in loss of yield.

Operational Definitions of Drought – Operational definitions help people identify the beginning, end, and degree of severity of a drought. To determine the beginning of drought, operational definitions specify the degree of departure from the average of precipitation or some other climatic variable over some time period. This is usually done by comparing the current situation to the historical average, often based on a 30-year period of record. The threshold identified as the beginning of a drought (e.g., 75% of average precipitation over a specified time period) is usually established somewhat arbitrarily, rather than on the basis of its precise relationship to specific impacts. Operational definitions can also be used to analyze drought frequency, severity, and duration for a given historical period. Such definitions, however, require weather data on hourly, daily, monthly, or other time scales and, possibly, impact data (e.g., crop yield), depending on the nature of the definition being applied

Operational Definition for Agriculture - might compare daily precipitation values to evapotranspiration rates to determine the rate of soil moisture depletion, and then express these relationships in terms of drought effects on plant behavior (i.e., growth and yield) at various stages of crop development. A definition such as this one could be used in an operational assessment of drought severity and impacts by tracking meteorological variables, soil moisture, and crop conditions during the growing season, continually reevaluating the potential impact of these conditions on final yield.

Drought produces a complex web of impacts that spans many sectors of the economy and reaches well beyond the area experiencing physical drought. This complexity exists because water is integral to our ability to produce goods and provide services.

Impacts are commonly referred to as direct or indirect. 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 direct impacts. The consequences of these impacts illustrate indirect impacts. For example, a reduction in crop, rangeland, and forest productivity may result in reduced income for farmers and agribusiness, increased prices for food and timber, unemployment, reduced tax revenues because of reduced expenditures, increased crime, foreclosures on bank loans to farmers and businesses, migration, and disaster relief programs. Direct or primary impacts are usually biophysical. Conceptually speaking, the more removed the impact from the cause, the more complex the link to the cause. In

fact, the web of impacts becomes so diffuse that it is very difficult to come up with financial estimates of damages. The impacts of drought can be categorized as economic, environmental, or social.

Income loss is another indicator used in assessing the impacts of drought because so many sectors are affected. Reduced income for farmers has a ripple effect. Retailers and others who provide goods and services to farmers face reduced business. This leads to unemployment, increased credit risk for financial institutions, capital shortfalls, and loss of tax revenue for local, state, and federal government. Less discretionary income affects the recreation and tourism industries. Prices for food, energy, and other products increase as supplies are reduced. In some cases, local shortages of certain goods result in the need to import these goods from outside the stricken region. Reduced water supply impairs the navigability of rivers and results in increased transportation costs because products must be transported by rail or truck. Hydropower production may also be curtailed significantly.

Environmental losses are the result of damages to plant and animal species, wildlife habitat, and air and water quality; forest and range fires; degradation of landscape quality; loss of biodiversity; and soil erosion. Some of the effects are short-term and conditions quickly return to normal following the end of the drought. Other environmental effects linger for some time or may even become permanent. Wildlife habitat, for example, may be degraded through the loss of wetlands, lakes, and vegetation. However, many species will eventually recover from this temporary aberration. The degradation of landscape quality, including increased soil erosion, may lead to a more permanent loss of biological productivity of the landscape. Although environmental losses are difficult to quantify, growing public awareness and concern for environmental quality has forced public officials to focus greater attention and resources on these effects.

Social impacts mainly involve public safety, health, conflicts between water users, reduced quality of life, and inequities in the distribution of impacts and disaster relief. Many of the impacts specified as economic and environmental have social components as well. Many of the previous effects described here would be felt if widespread drought were to strike Hopkinton. Primarily, the worst effects would be felt amongst the farm community in Town. Crops would be devastated, livestock would perish and most farmers would suffer terrible financial losses. Hopkinton has municipal water service in only two areas of the town; the Hope Valley area connected to the Richmond system and the Ecclelston Plat area of Ashaway. The rest of the Town residents get their water via individual wells. There is a strong possibility that many of the residents would suffer water service interruption in extended periods of drought. Finally, water related recreation would experience disruption due to obvious problems created by drought, thus affecting the town’s tourism industry.

Earthquake

There is a relatively small amount of historical data regarding earthquakes and their effects on the Town of Hopkinton. According to USGS data, earthquakes have been experienced in Rhode Island in 1658, 1727, 1732, 1755, 1783, 1791, 1848 and in1860 with little data available on effects that were felt. On February 27, 1883 an earthquake centered in Rhode Island produced intensities felt from New London Connecticut to Fall River Massachusetts. This intensity is listed as a V in the Rhode Island area. On February 28, 1925, an intensity IV/ V, magnitude 7, quake centered in the St. Lawrence River Valley was felt throughout New England including Washington County, Rhode Island. Similar quakes were also felt in the 1940's, 1960's and the 1970's. This prompted officials to modify building codes in Rhode Island and include higher seismic requirements in public buildings dependent on occupancy and usage.

According to Rhode Island geological experts however, no large earthquakes have influenced Hopkinton for several hundred years but, minor quakes may be felt once every few years. Rhode Island is not a high-risk area for earthquakes due to its position in the middle of a tectonic plate and on a passive oceanic margin. All but the northeast corner of the State has been classified by the USGS as an area with a peak ground acceleration of 3%g with a 10% likelihood that this PGA will be exceeded within a 50 year period. Structures built on filled land are always more vulnerable to shaking than structures built on bedrock. Attentive planning committees, strict building codes and aggressive code enforcement should prevent problems before earthquakes occur.

What is an Earthquake?

Earthquakes are one of nature's most damaging hazards. An earthquake is a sudden motion or trembling that is caused by a release of strain accumulated within or along the edge of the earth's tectonic plates. The severity of these effects is dependent on the amount of energy released from the fault or epicenter. The effects of an earthquake can be felt far beyond the site of occurrence. They usually occur without warning and after just a few seconds can cause massive damage and extensive casualties. Common effects of earthquakes are ground motion and shaking, surface fault ruptures, and ground failure.

Earthquakes are more widespread than is often realized. The area of greatest seismic activity in the ?United States is along the Pacific Coast in California and Alaska but as many as 40 states can be characterized as having at least moderate earthquake risk. For example, seismic activity has been recorded in Boston, Massachusetts; New Madrid, Missouri; and Charlestown, South Carolina, places not typically thought of as Earthquake zones. Areas prone to earthquakes are relatively easy to identify in the Western United States based on known geologic formations; however, predicting exactly when and where earthquakes can occur is very difficult everywhere.

There are several common measures of earthquakes. These include the Richter Magnitude (scale), Modified Mercalli Intensity (MMI), Moment Magnitude and Peak Ground Acceleration (PGA). We used PGA for measuring earthquake hazards in Hopkinton.

Acceleration is a term frequently used in the earthquake planning process. It is one way to express an earthquake's severity by comparing acceleration to the normal acceleration of gravity. If you stood on the surface of the earth and dropped an object, (ignoring wind resistance) it would fall toward the earth faster and faster until it reached terminal velocity. This principle is known as acceleration and represents the rate at which speed is increasing. The acceleration due to gravity is often called "g", a term that is normally associated with roller coasters, rockets and even stock car racing. The acceleration due to gravity at the earth's surface is 9.8 meters (980 centimeters) per second squared. That means that every second that something falls toward the surface of earth its velocity increases by 9.8 meters per second. A 100% g earthquake is very severe.

Peak ground Acceleration
PGA is a measure of the strength of ground movements. The PGA measures the rate in change of motion relative to the established rate of acceleration due to gravity (g) (980 cm/sec/sec). For example, in an earthquake, with an acceleration of the ground surface of 244cm/sec/sec, the PGA or rate in change of motion is 25%g where:

%g= Ground Surface Acceleration/Rate
Of Acceleration due
to gravity

%g= 244 cm /sec/sec/
980cm/sec/sec and
%g= 25%

Extreme Heat

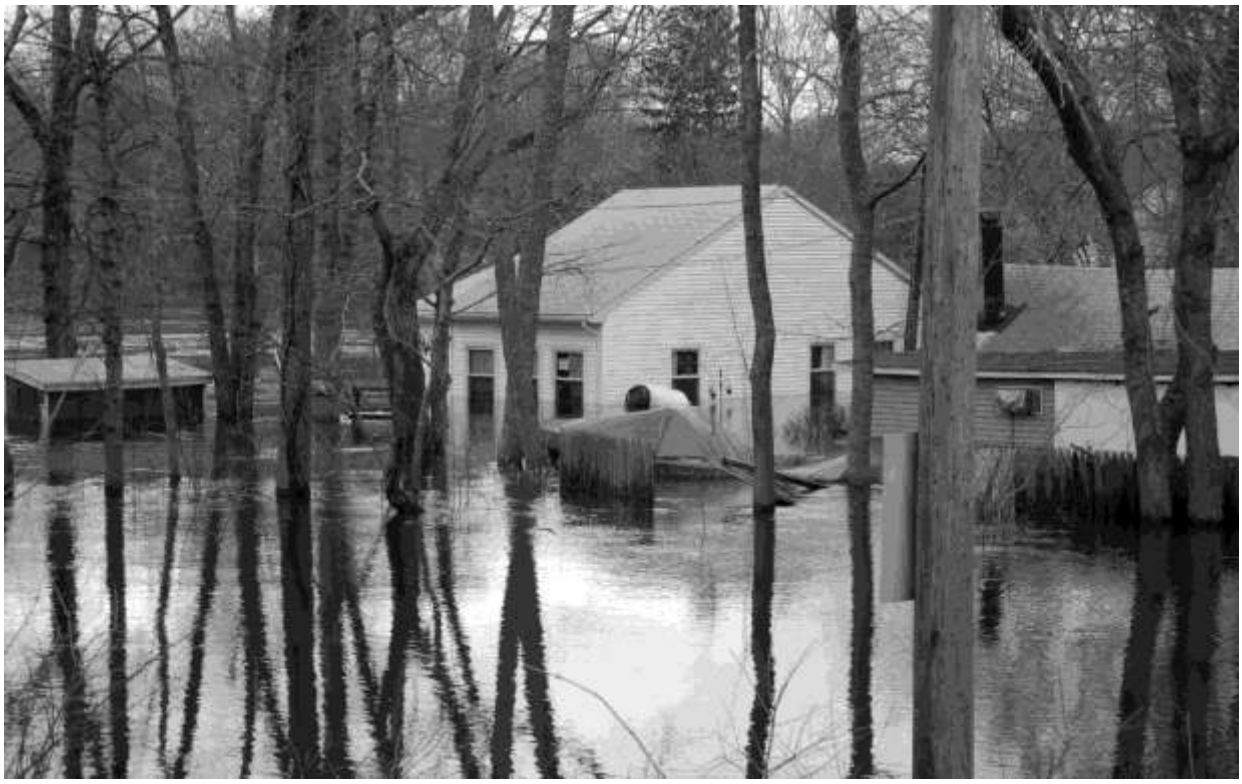
While Hopkinton is usually not terribly hot during the summer months, a risk for heat emergencies during long hot spells is a potential. There are a large number of elderly residents in town who could be at risk for death or illness during these periods. There is potential that power outages could occur during these times which would shut down the air conditioners that many rely on for survival. Private water systems and wells could experience shutdown and deprive persons of needed fluids. While the typical temperature ranges in the mid – eighties throughout the summer months, a few heat waves with temps in the 90's and 100's have been recorded. On average, Rhode Island experiences an average of 10.2 days per year when the temperature is over 90 degrees and an average relative humidity of 72-74%.

Weather experts have concern when high pressure sits over our region for too long a period. They watch the temperatures not only on the ground but also in the higher altitudes. When the temperatures are hotter in the higher altitudes, it acts like a "lid" over the area and does not allow our region to cool off during the nighttime. This makes both the heat and the pollution normally in the air stay low to the ground. When the relative humidity is combined to the ground temperature, a figure known as the apparent temperature is felt. This apparent temperature, much like the wind chill factor, is also plotted on what is known as the heat index. When the apparent temperature is greater than 105 -110 degrees for longer than 2 days, this is known as a heat wave. The National Weather Service reports that about 175 persons die in a normal year due to the effects of summer heat, a death toll greater than that caused by lightning, hurricanes, tornadoes or floods.

Flood

Floods occur when a river, stream, pond or other waterway exceeds the capacity that it was designed or rated for. Hopkinton has many areas that are listed as flood zone areas and several have been tested in past years. There is extreme risk of home and business damage, infrastructure and potential death. Farm crops can also be destroyed by flood waters Floods are one of the most common hazards in the United States. Flood effects can be local, impacting a neighborhood or community, or very large, affecting entire river basins and multiple states. However, all floods are not alike. Some floods develop slowly, sometimes over a period of days. But flash floods can develop quickly, sometimes in just a few minutes and without any visible signs of rain. Flash floods often have a dangerous wall of roaring water that carries rocks, mud, and other debris and can sweep away most things in its path. Overland flooding occurs outside a defined river or stream, such as when a levee is breached, but still can be destructive. Flooding can also occur when a dam breaks, producing effects similar to flash floods.

Flooding at Dow Field – April 2004



Flooding at French Village – Main St. – March 2010

Severe Thunderstorm

Occurring mostly during summer months, severe thunderstorms routinely have produced widespread damage throughout the town. There have been downed trees and power-lines, lightning strikes to homes and businesses, and damage to municipal radio and alarm systems in past years. Lightning, heavy rain, wind and hail can be the major culprits during severe thunderstorms. Severe thunderstorms typically occur 10 – 20 times a year in Hopkinton

All thunderstorms are dangerous. Every thunderstorm produces lightning. In the United States, an average of 300 people are injured and 80 people are killed each year by lightning. Although most lightning victims survive, people struck by lightning often report a variety of long-term, debilitating symptoms. Other associated dangers of thunderstorms include tornadoes, strong winds, hail, and flash flooding. Flash flooding is responsible for more fatalities - more than 140 annually - than any other thunderstorm-associated hazard. Thunderstorms may occur singly, in clusters, or in lines. Some of the most severe occur when a single thunderstorm affects one location for an extended time. About 10% of thunderstorms are classified as severe – one that produces hail at least three quarters of an inch in diameter, has winds of 58 mph or higher or produces a tornado.

Severe Winter Storm

The Town of Hopkinton is located in the New England States region where the weather, during the winter months, can pose many problems. Problems that are associated with severe winter storms are power outages, (widespread and local); ice covered and snow packed roads, downed trees, roof collapses, and deaths caused by extreme cold exposure. Blizzards, ice storms and nor'easters all fall into the category of severe winter storm.

During past years, there have been many severe winter storms that have affected the safety of Hopkinton residents. One of the most memorable storms that occurred was the Blizzard of 1978. During February of 1978, a severe winter storm dumped over three feet of snow on much of the Connecticut, Massachusetts and Rhode Island areas in about 18 hours. Much of Rhode Island was paralyzed with many areas not being plowed out for more than five days.

Blizzard of 2005

Hopkinton was not spared by this blizzard. Much of the town was covered with two to three feet of snow and all town services were brought to a standstill. Police and EMS services were completed with combinations of snowmobiles and four wheel drive trucks. Fire and Public works activities were severely hampered by the deep snow, drifts and piles weeks after the storm. Each year, severe winter storms befall our area, but fortunately none have been as severe as the one in 1978. The potential always exists for storms of this magnitude and others that produce damaging ice, deep snow and extreme low temperatures

Tornado

What is a Tornado?

A tornado is a violently spinning column of air extending from a thunderstorm to the ground. The most violent tornadoes are capable of tremendous destruction with wind speeds of up to 250 mph or more. Damage paths can be in excess of 1 mile wide and 50 miles long.

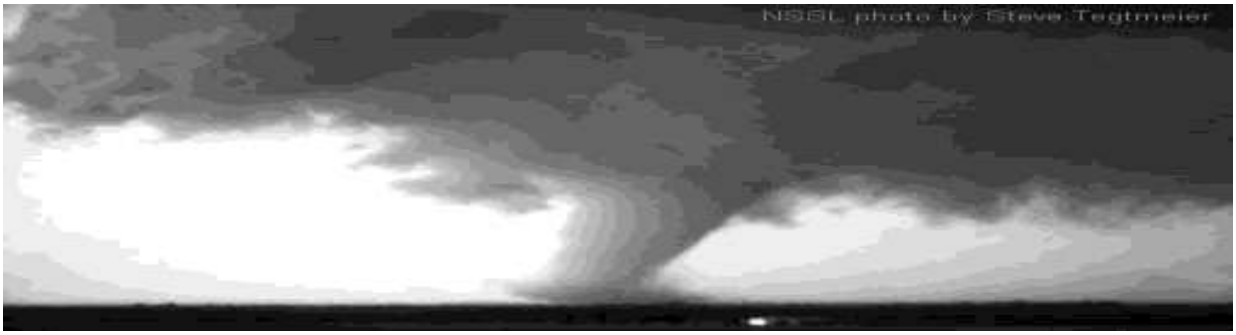
Tornadoes are among the most unpredictable of weather phenomena. While tornadoes can occur almost anywhere in the world, they are most common in the United States. According to the National Weather Service, about 42 people are killed each year due to tornadoes. Tornadoes can occur in any state but are more frequent in the Midwest, Southeast and Southwest.

Tornado season runs March through August; however tornadoes can strike at any time of the year if the conditions are right

What causes a tornado?

Thunderstorms and hurricanes spawn tornadoes when cold air overrides a layer of warm air, causing the warm air to rise rapidly. The winds produced from hurricanes, earthquake induced fires and wildfires have also been known to spawn tornadoes.

The frequency of tornadoes in the nation’s midsection is the result of recurrent collision of moist, warm air moving north from the Gulf of Mexico with colder fronts moving east from the Rocky Mountains.



A tornado can occur at any time, during all types of weather conditions, and in most areas. Strength and topography play a huge part in the life cycle of tornadoes. In the past, tornadoes have occurred in surrounding Rhode Island areas but not actually recorded in Hopkinton. Tornado–like activity known as microbursts, have occurred around Hopkinton and created localized and moderate wind damage. Potential damage can range from downed trees, power lines, and building collapse.

Fujita tornado Measurement Scale		
Category F0	Gale Tornado 40-72 mph	*Light damage.* Some damage to chimneys; break branches off trees; push over shallow rooted trees; damage to sign boards.
Category F1	Moderate Tornado 73-112 mph	*Moderate damage*. The lower limit is the beginning of hurricane wind speed; peels surface off of roofs, mobile homes pushed off foundations or overturned; moving autos pushed off roads
Category F2	Significant Tornado 113-157 mph	*Considerable damage*. Roofs torn off frame houses; mobile homes demolished; boxcars pushed over; large trees snapped or uprooted; light object missiles generated
Category F3	Severe Tornado 158-206 mph	*Severe damage*. Roofs and some walls torn off well-constructed houses; trains overturned; most trees in forest uprooted; cars lifted off of the ground and thrown.
Category F4	Devastating Tornado 207-260 mph	*Devastating damage*. Well constructed houses leveled; structure with weak foundation blown off some distance; cars thrown and large missiles generated.
Category F5	Incredible Tornado 261-318 mph	*Incredible damage*. Strong frame houses lifted off foundations and carried considerable distance to disintegrate; automobile-sized missiles fly through the air in excess of 100 yards; trees debarked; incredible phenomena will occur.

Wildfire

A wildfire is an uncontrolled fire spreading through vegetative fuels exposing and possibly consuming structures. They often begin unnoticed and spread quickly and are usually signaled by dense smoke that fills the area for miles around. Naturally occurring and non-native species of grasses, brush and trees fuel wildfires.

A wildland fire is a fire in an area which development is essentially non-existent, except for roads, railroads, power lines and similar facilities. An urban-wildland interface fire is a wildfire in a geographical area where structures and other human development meet or intermingle with wildland or vegetative fuels. There are several locations within Hopkinton where structures and woodland fuel areas mix.

Rhode Island, as a whole, is not at remarkable risk for wildland fire. Most of the state is primarily suburban and urban with several rural areas. These rural areas have

numerous residences bordering moderately sized forest areas containing both hardwoods and pine type woods, and a moderate to heavy ground fuel load consisting of dead tree debris, and woody shrubs. These potential fuel types are common to the Hopkinton forest areas. During the early spring and late fall, weather conditions become ideal for fires with warm temperatures, strong winds, low humidity and dry above-ground fuels. Long term drought conditions in the summer months could also prove to be potentially hazardous causing drying conditions that affect fuels.

The potential for wildland-interface fire in the Hopkinton is tremendous. Since Hopkinton is mainly a rural community, many residences are bordering or within forest areas, as stated above. In times when our forest areas burn uncontrollably, homes that abut interface areas are at great risk. The most serious occurrence of a wildland interface fire in Hopkinton took place in the 1950's where thousands of acres of northern Hopkinton and several homes were destroyed by fire. One Hopkinton firefighter also perished in the blaze.

The risk is far greater today as there are many more homes on the interface than there were in the fifties. Also, early detection efforts have been limited by the discontinuation of fire tower use by the State of Rhode Island Forestry Division. Rhode Island may not have a risk for spontaneous fire ignition due to dry lightning but, there is always a risk of fires from arson or careless fire use.

The Great Yawgoo Fire - 1930

Windstorm

Windstorms are usually hurricane force winds, without the nasty storm to accompany it. Residents are at risk for power outages and downed trees from these winds. These winds can be as low as tropical storm force to full hurricane speed.

HOPKINTON HAZARD MITIGATION PLAN
CHAPTER 5 – RISK ASSESSMENT

After determining the hazards that could affect Hopkinton, the next step the committee took was to rank these hazards in way that could predict future events. Using a system that NOAA and many communities around the state have utilized, the committee developed a matrix of risk based on three separate components; frequency of occurrence; area of impact; and potential damage magnitude.

Frequency of Occurrence

It is important to track the number of times that a hazard has impacted Hopkinton in the past. This provides a measure of the likelihood of the event occurring again in the future. The rating that was used in this section was the result of an investigation of the trends in data. This gives the committee a good basis to predict future events.

Table 5-1-Frequency of Occurrence

Approx. Recurrence (years)	Approx. Annual Probability	Subjective Description	Frequency Score
1	100%	Frequently occurring hazards, multiple recurrences in one lifetime	5
50	2.0%	Typically occurs at least once in an lifetime of average building	4
250	0.40%	25% chance of occurring at least once in a lifetime of average building	3
500	.20%	10% chance of occurring at least once in lifetime of average building	2
1000	.10%	Highly infrequent events, like maximum considered earthquake	1
2500	0.04%	Unlikely event	0

Area of Impact

A Second criteria used in evaluating the risk of a community to natural hazards is used to determine the area of impact. Some hazard events impact only a small region, while others affect the entire area. The area of impact determination indicates how much of the immediate area is impacted by a single event. Again, historical data is used to investigate damage and loss records of previous hazard events to develop an estimate of where expected impacts or the amount of property damage may occur from future events.

Table 5-2 – Area of Impact

Mean Affected area (mi^2/event)	Subjective Description	Area impact Score
0	No affected area	0
1	Highly Localized (city block area)	1
10	Single zip code impact	2
50	City scale impact	3
100	County scale impact	4
500	Regional impact (statewide)	5

Potential Damage Magnitude

An intensity or magnitude criterion is used to determine the range of the severity of damage (from minor to devastating) expected from a single event. Previous damage reports and other historical data are used.

Table 5-3 - Magnitude Score

Magnitude Score	Earthquake MMI	Hurricane SSI	Average Flood Elevation
0	3	0	0
1	4	1	1
2	5	2	8
3	7	3	12
4	9	4	14
5	12	5	24

The individual scores are then combined together using this method:

(FREQUENCY SCORE +AREA OF IMPACT) x DAMAGE MAGNITUDE= TOTAL SCORE

Hopkinton Hazard Assessment Matrix

Hazard Type	Frequency score	Impact Score	Magnitude Score	Total Score	Rank
Coastal Storms	*5*	*4*	*3*	**27**	***5***
Tropical Cyclone	*5*	*5*	*3*	**30**	***3***
Dam Failure	*3*	*4*	*4*	**28**	***4***
Drought	*4*	*5*	*2*	**18**	***7***
Earthquake	*1*	*5*	*2*	**12**	***9***
Extreme heat	*5*	*5*	*1*	**10**	***10***
Flood	*5*	*5*	*4*	**40**	***1***
Hailstorm	*4*	*2*	*2*	**12**	***9***
Severe thunderstorm	*5*	*4*	*3*	**27**	***5***
Severe Winter Storm	*5*	*5*	*2*	**20**	***6***
Tornado	*1*	*3*	*4*	**16**	***8***
Wildfire	*3*	*4*	*5*	**35**	***2***
Windstorm	*5*	*5*	*2*	**20**	***6***

List of Hazards Ranked By Risk Score

- 1. Flood
- 2. Wildfire
- 3. Tropical Cyclone
- 4. Dam Failure
- 5. Severe Thunderstorm
- 5. Coastal Storm
- 6. Severe Winter Storm
- 6. Windstorm
- 7. Drought
- 8. Tornado
- 9. Earthquake
- 9. Hailstorm
- 10. Extreme Heat

The previous list shows, by ranking, the most recent hazard scores for the Town of Hopkinton. The following will show the methodologies used to determine each individual score and will profile some of the events that have happened in the past.

Flood Risk Score – 40

Frequency Score – 5 Impact Score – 5 Magnitude Score – 4

When a waterway exceeds the capacity that it was designed or rated for, flooding occurs. The major waterways of concern are the Wood and Pawcatuck rivers, the Canonchet Brook, Tomaquag Brook, Ashaway River Brushy Brook and Parameter Brook. Severe precipitation events or several events can cause significant flood events. There is at least a 25% chance of a flood occurrence in the lifespan of all local buildings and it is likely that an event of this nature would probably be happening on at least the County scale. According to USGS data, until 2010, only two major floods had struck Hopkinton in past years. In 1927, one was caused by a tropical storm and was listed to be the worst flood since 1886. The second worst flood occurred in March of 1968 and was said to be a flood with a recurrence interval of about 40 years.

Typically, heavy rains in the early spring have caused minor floods and flood associated problems. In April of 2004, several days of heavy rains caused most of the Town's rivers to exceed their capacity. Fire crews were called when flood waters carried propane tanks into the Ashaway River near Wellstown Rd.

By far, one of the most significant flood events in the town of Hopkinton were those during the "March 2010 Severe Rain Events. The State of Rhode Island experienced heavy rainfall and documented hurricane force winds during storms that affected the state between the dates of March 12, 2010 through March 31, 2010. The most affected areas were Kent County, which received 3.68 inches, Providence County, which received up to 5.71 inches and Washington County which received 5.55 inches of rain over that time frame. The monthly rainfall total in Providence, R.I., was 16.32 inches; making March the city's all time wettest month on record.

The Pawtuxet River went into major flood stage on the evening of March 14th. On March 15th, the Pawtuxet River hit historic levels cresting at 14.98 feet. The previous record amount was 14.5 in 1982. Due to historic flooding caused by the heavy amount of rainfall and hurricane force winds, households and businesses along the Pawtuxet River were severely damaged. Across Kent County, including the City of Warwick and the Towns of Coventry, East Greenwich, and West Greenwich, there was further devastation along the rivers path, as well as other bodies of water that were already swollen from previous storms.

Providence County was also affected the Pawtuxet River's flooding, particularly the City of Cranston, which has historically been flood-prone in low lying areas. At Providence, 5.32 inches of rainfall was observed on 30 March which was the 5th largest daily rainfall for the site. The two-day total (30-31 March 2010) was 8.79 inches; breaking the previous all-time record of 7.84 inches set on October 14-15 2005. Providence also set a new all-time monthly record of 16.34 inches, breaking the previous record of 15.38 set for October in 2005.

Most of the damage in Washington County was from rainfall, water runoff and wind damage.

Hopkinton was not spared throughout this historic event. The storms that occurred earlier in the month caused routine issues such as local minor flooding and flooded basements. The Pawcatuck River was at near flood stage and was able to recede slightly after each of the early events. One area of particular concern was the French Village on Main Street in Ashaway. The Pawcatuck breached a wall along the neighborhood but did not enter an occupied residence there, holding at just below the living area.

On March 29th the rain began to fall steadily by late morning. The rain continued steadily throughout the day with the both fire departments responding to numerous flooded cellars. By early morning on the 30th, many of the roads had several inches of water on them and many areas of local flooding were present. Most of the area's dams were at or above their capacities. Heavy rain continued throughout the day. All schools were forced to dismiss early due to flooded roadways and worsening weather conditions. Town Police, Fire and EMS departments responded to several hundred calls for motorists stranded in their motor vehicles, basements flooded and reports of flooded roadways. A state of emergency was declared at mid-day due to the need for additional state and federal resources. Severe flooding was experienced in several locations. Most of Laurel St. was under upwards of 6 or more feet of water with evacuation of most residents living in the areas of Maxson St. and Clay St. Water entered the production floors of one of America's oldest family businesses, the Ashaway Line and Twine. On Burdickville road near the Town Line, flood waters topped the banks of the Pawcatuck River, completely destroyed the roadway and relocated some small private out buildings near the bridge. Main Street in Ashaway was closed for nearly a week and a half due to flood waters topping the banks of the Pawcatuck at the Westerly line, reaching all the way up to the Lucky House Restaurant (nearly a quarter mile). Flood waters crossed Main Street in the area of the Reynolds Farm and completely washed away the entire road surface.
The Village of Hope Valley was not spared during this event. The Main Street and Spring Street intersection had several feet of running water causing damage to all of the businesses in the area including significant damage to Hope Valley – Wyoming Fire District Building and apparatus apron. Main Street was under water from the Richmond line down to Fairview Avenue. Mechanic Street was completely flooded in several sections especially in the area of the stone dam and the mill. At about 5 pm several residents in the area of Blue Pond reported that the Blue Pond Dam breached and the pond was rapidly emptying. Those reports proved to be correct with a later inspection showing a large foot section completely washed out of the dam and most of the pond's water gone. Downstream from the pond, a 700 foot section Marshall Driftway was completely washed away stranding several families for six days.
In all 17 different roads were closed for upwards of two weeks. National Guard troops spent several days assisting with traffic control duties. All of the town's bridges and several dams were inspected to assure that flood waters had not stressed them. Only one, the Woodville Bridge, was significantly damaged to point of long-term closure, and still remains closed as of November 2010.

By May 27, 2010, FEMA received 444 applications for federal Individual assistance (IA) in the Town of Hopkinton alone. FEMA spent countless hours going door to door assisting individuals with accessing the FEMA disaster assistance process. It is believed that many more persons chose not to apply for assistance for various reasons. This was evidenced by the numerous dumpsters and storage containers seen on resident's properties during the months of April through July. As of October 2010, the Rhode Island Emergency Management Agency reports that the total Federal Aid to Rhode Island totaled over 111 million dollars.

Wildfire Risk Score 35

Frequency – 3 Impact – 4 Magnitude - 5

Hopkinton's second most significant risk identified is that of wildfire. Hopkinton has an extremely large amount of woodland area and most of the town's more than 3000 residences are on the wildland interface. In the 1960s there was a particularly devastating wildfire in northern Hopkinton, Exeter and West Greenwich that destroyed thousands of acres, several homes and caused the death of a Hope Valley firefighter. While as of late, Hopkinton has not had many "wildfires" per the official definition, there are many small-scale brush or forest fires each year in most areas of the town. The causes of these fires are several, careless smoking, arson, automobile fires and open burning (campfire, trashcan and brush piles). These fires have at least 25% chance of occurring in the lifetime of a building, earning the frequency score of 3. Any large-scale wildfire that occurs in Hopkinton has a potential to impact not only the local area but at least countywide. This is due mostly to the fact that the fire may go undetected for long periods because of the lack of manned fire towers. Thus, an impact score of 4 is earned. Finally, as history shows, the magnitude of this event will be great. The previous wildfire devastated many acres destroyed property and even led to the death of a town firefighter. The magnitude score earned was 5.

Tropical Cyclone Risk Score – 30

Frequency Score – 5 Impact Score – 5 Magnitude Score – 3

Hurricanes and tropical storms have always been a major hazard in the Hopkinton area. Destructive winds and huge quantities of rain have struck our area many times in the past and wreaked havoc. While Hopkinton is not a coastal community, major effects from past tropical cyclones have not been felt by our inland town. The Hurricanes of 1938 and 1944, Carol (1954), Gloria (1985) and Bob (1991) all caused widespread damage in Hopkinton. Downed trees, minor flooding and widespread long-term power outages were recorded after all of these events. These were all category 2 or 3 storms and occurred during August or September, a prime time for these events in our area.

On September 14 and 15 in 1944 a hurricane struck our area causing moderate damage. Many large trees were reported down including a tree on a house in the village of Ashaway. Phone service to the entire town was disrupted for several days.

On September 21, 1985, Hurricane Gloria made landfall west of Rhode Island and caused considerable damage to our area. In advance of the storm, town officials established shelters at both town fire headquarters and the Ashaway School although there are no records of any persons being sheltered anywhere. After the storm struck, many trees and power lines were reported downed and power was disrupted to most areas for up to three weeks. Sustained hurricane force winds were reported in the immediate area with many gusts in the 120 mph range.

Category 2 storm hurricane Bob struck New England August 19, 1991. A fast moving storm, Bob developed in the Bahamas on August 16 and steamed up the coast making landfall in a short three days. Due to its swiftness, 1200 Boy Scouts from Camp Yawgoog in Rockville were forced to seek refuge at the camp mess hall and were later evacuated to the Chariho Middle School Shelter. Once again, several trees and power lines were reported downed and power was disrupted for several days. Area fire departments responded to a pair of structural fires that heavily damaged an Ashaway home. Winds of 100 to 120 mph were reported.

Several Tropical storms have also struck our area. In 1996 Tropical Storm Bertha caused a fire at a wall-covering manufacturer in town after high winds knocked power out. Two large trees were downed in town and there were reports of small tornadoes in Washington County.

In the years up to the revision of this plan, there have been several times that tropical cyclones have made their way up towards the New England area. Fortunately these storms have either weakened below the “tropical” definitions or turned out to sea and missed Hopkinton entirely. Many area weather experts say that due to the cyclical patterns of tropical cyclone history, the New England area is long overdue for another major hurricane landfall.

Dam Failure Risk Score – 28

Frequency Score – 3 Impact Score – 4 Magnitude Score - 4

While dam failure is officially a technological hazard, the effects that are felt following a catastrophic failure can be great. Hopkinton has several dams within the Town’s boundaries so therefore; it is imperative to plan for a failure. Dam failures are fairly rare, but many local dams are in need serious repairs making a 25% chance of occurrence in the average life of a building possible. When dams break the damaged or flooded area is, usually, within a zip code of origin but can potentially affect many surrounding areas. The damage or magnitude that can be accrued is potentially catastrophic with even the potential of loss of life.

The State of Rhode Island inspects all dams on a routine basis and has been doing so since 1883. Currently, there are 528 dams inspected statewide, 41 within the town of Hopkinton. Of those 41, 6 are State owned, 2 are town owned, and 33 are privately owned. Three of the dams are classified as High Hazard Dams; eight dams are listed as

Significant Hazard Dams while the other thirty are listed as Low Hazard Dams. The state dam classifications are as follows:

- High Hazard – Failure of the dam would most probably result in the loss of more than a few lives and extensive property damage.

- Significant hazard – Failure of the dam could possibly result in the loss of life and appreciable property damage.

- Low Hazard – Failure of the dam would result in no apparent loss of life and only minimal or no property damage.

On February 18, 1998, a mid winter rain event caused a dam failure at California Jim's Pond in South Kingstown. Damage costs exceeded $400,000.00 to the dam, a portion of route 108 that was damaged and local residential damage claims. No one was injured at this event.

On March 30, 2010, the Blue Pond Dam experienced a significant breach following a series of significant rain events during the month of March. At approximately 5pm, several Canonchet Rd. residents called the Hopkinton EOC notifying them of the dam breach and stated that a huge wall of water was cascading through their yards causing damage to outbuildings, fences and culverts. After the storm, further examination of the area showed that Main Street near the Reynolds farm had been washed away; Marshall Driftway had about 700 feet of roadway completely washed away, and many areas of Canonchet Rd. needed attention due to washouts and debris. The dam itself had a huge section of its retaining wall missing and most of the Blue Pond had drained. It is believed that several other areas were affected by the breach of this dam. According to dam inundation maps, a breach of the Blue Pond dam could cause damage as far down as the Alton Pond dam. Flooding and damage to roads was experienced all along the inundation area. The Alton Pond dam was overtopped with damage only occurring to the road surface on the topside and erosion around the sides. The Burdickville Rd. Bridge at the Charlestown border was completely flooded over and severe damage was caused to the road surface and to outbuildings on the Hopkinton side. To date, repairs have not been made to the dam but all roads in the area have been repaired.

Severe Thunderstorm Risk Score – 27

Frequency Score – 5 Impact Score – 4 Magnitude Score – 3

During the late spring and throughout the summer, severe thunderstorms routinely strike Hopkinton and surrounding areas. Torrential rains, hail, heavy winds and dangerous lightning characterize these storms. In past years, damage has occurred to several town and area public safety dispatch radio systems, ruined generating systems, destroyed municipal fire alarm systems and caused several structural fires. Lightning is attributed to most of the damage in these types of storms and damage estimates have run into the hundreds of thousands of dollars.

Coastal Storm Risk Score – 27

Frequency Score – 5 Impact Score – 4 Magnitude Score – 3

Coastal storms in Southern New England are a year-round threat to the citizens of Hopkinton. Nor'easters and similar type storms strike on a frequent basis each year and cause millions in costs and damage to cities and towns. On January 22, 2005, a powerful nor'easter struck Rhode Island and dropped over 22 inches of snow and buffeted the area with winds up to 50 mph. A State of Emergency was declared and the State was shut down for the better part of three days. A Presidential Disaster Declaration was also signed for Rhode Island for this event.

Spring and fall storms have also caused havoc in the past. High winds, and torrential rains have left many areas flooded, downed trees and wires and have caused long term power failures. These events can happen at any time throughout the year, so therefore, the frequency for these occurrences is high. Most of these storms usually impact the entire State due to the size of Rhode Island, but in this case the county, at minimum, would be impacted as a whole. Total devastation of an area during coastal storms is extremely rare but, significant damage due to power outages, high wind, torrential rain or heavy snow is likely

Severe Winter Storm Risk Score – 20

Frequency Score – 5 Impact Score – 5 Magnitude Score – 2

As a community in the northeast, Hopkinton's weather from late fall through early spring is filled with snowstorms, ice storms, freezing temperatures, and blizzards. Past years show that winter weather has occurred as early as November and as late as May. These storms have produced subfreezing temperatures, significant snowfall and power outages. It is not uncommon for these storms to occur at least yearly, if not even more often. Therefore this hazard earned the Frequency Score of 5, a frequently recurring hazard, with multiple recurrences in one lifetime. Because of the size of both Hopkinton and Rhode Island, it is not uncommon for impacts of a storm to be felt throughout the State leaving the impact score for winter storms a 5. Generally the magnitude of severe winter can be moderate. Damage would probably not be devastating but the effects can last for some period of time and cost millions to clean up.

In February of 1978, a severe winter storm dubbed the "Blizzard of '78" struck all of New England. Most parts of Rhode Island saw storm totals of up to 4 feet, and scattered power outages. Most roads were closed for the better part of a week and travel was limited to snowmobiles in most areas. In Hope Valley, the Fire Station was used as a shelter for travelers who were stranded on Route 95.

On April 1, 1997, a late season severe winter storm barraged Hopkinton and caused a fair amount of damage statewide. Our area received around 8 inches of snow and heavy winds caused many power outages and downed trees. Power outages and generator malfunction at the Hopkinton police Headquarters caused communications disruption for more than 5 hours. The fire alarm system in the Ashaway Fire District was put out of service for many hours due to several downed alarm wires.

While Hopkinton is rarely spared by winter storms each year, truly severe storms have been rather limited. In the past few years, there have been many storms predicted to be blizzard-like or actual blizzards. Fortunately, none of them have lived up to the claims of the weather predictions. However, a December 19, 2009 nor'easter dropped about 18 inches of snow and produced some high winds and scattered power outages. There was sufficient warning about this storm and plow crews were ready in advance. Due to the storm striking on a weekend, only minor impact was felt by residents. However, the storm had a major economic impact on the east coast by disrupting one of the busiest Christmas shopping weekends of the year.

Windstorm Risk Score – 20

Frequency Score – 5 Impact Score – 5 Magnitude Score - 2

Wind type events are probably one of the most common hazard events that happen in our area. Winds in the area of tropical storm strength are not uncommon and have occurred in conjunction and following other severe weather events. Damage from these events has been mostly limited to downed trees and power lines but a few events have actually produced winds strong enough to cause minor damage to homes and businesses. Impacted areas are usually statewide but the damage is relatively low on the magnitude side.

Drought Risk Score – 18

Frequency Score – 4 Impact Score – 5 Magnitude Score - 2

Droughts are defined as a protracted period of deficient precipitation resulting in extensive damage to crops. In other words, there is a long period without rain which makes crop growing amongst other things difficult. There is the possibility that drought will occur within the lifetime of a building in Hopkinton. On average, there is a great chance, due to the size of Rhode Island that the entire state will be included in this drought.

There are several concerns with drought occurrences in Hopkinton. First, most Hopkinton businesses and residents get their water, both potable and non potable from ground wells. During droughts, there are no guarantees that these wells will be of use due to the drying of aquifers. Next, fire protection for the entire community could be in jeopardy if the fire departments have no water supplies (lakes/ rivers) to draw from as there is no town-wide fire hydrant system. Tourism and recreation in Hopkinton would also be curtailed if the water areas of town were dry or of no use. Finally, the area farm industry that we have could be severely affected if water was not available to give to livestock of hydrate crops.

Tornado Risk Score – 16

Frequency Score – 1 Impact Score – 3 Magnitude Score - 4

New England is not at a great risk for tornadoes nor is the town of Hopkinton. That is not to say that Rhode Island has never had a Tornado. From 1950 – 1995, about 20 tornadoes were reported in Rhode Island. A tornado is reported in Rhode Island once every two to three years. It has been reported that tornadoes have caused 23 injuries and 23 million dollars in damage in Rhode Island during those years.

Most tornadoes are spawned during severe thunderstorms or hurricanes and can be extremely devastating. There are enough occurrences of both thunderstorms and hurricanes to make tornados a potential. On average, most tornado events damage areas hundreds of feet wide by miles long. Debris from these storms has been found sometimes hundreds of miles away. Hopkinton needs to continue to plan for future tornadoes.

Earthquake Risk Score – 12

Frequency Score – 1 Impact Score – 5 Magnitude Score - 2

The state geologist states that Hopkinton is at a relatively low risk of experiencing significant earthquake effects. That is not to say that earthquakes have never been felt in our area. Area history has recorded earthquake activity as far back as 1638 and as recent as 1976. Structures built on filled land are always more vulnerable to shaking than are those built on bedrock.

Hailstorm Risk Score – 12

Frequency Score – 4 Impact Score – 2 Magnitude Score - 2

There are relatively few recorded hail events in Hopkinton. Hailstorms are usually seen in conjunction with severe thunderstorms and tornado activity. The events that have occurred nearby have recorded golf-ball and dime sized hailstones and some minor damage. Hailstorms can potentially produce much larger sized stones (baseball/ softball) and have been known to destroy vehicles and other metal items, decimate crops and gardens and kill livestock. A great potential for personal injury or death exists for any persons caught outdoors during these events. Historically, the impact felt from hailstorms is limited to a single town-wide or smaller area at best.

Extreme Heat Risk Score – 10

Frequency Score – 5 Impact Score – 5 Magnitude Score - 1

Extreme heat emergencies usually occur on an almost yearly basis. In the mid to late summer months, the temperatures have been known to stay above 90 degrees for several days and the relative humidity is known to stay well above 75 to 86 %.

According to the National Weather Service's Heat Index, when there are temperatures and humidity mixtures of these types, everyone is highly susceptible to heat related exposure problems and even death after prolonged periods. Populations such as the very young and elderly are at the most extreme risk due to size, medications and underlying medical conditions. During these times power outages and brownouts can cause vital air conditioning systems to fail. These are extreme emergencies and will cause the need for many persons to evacuate to cooler areas or shelters with air conditioning.

HOPKINTON HAZARD MITIGATION PLAN
CHAPTER 6 – ASSET IDENTIFICATION AND VULNERABILITY ASSESSMENT

Once the committee determined what the hazards and risks were to Hopkinton, the next logical steps were to determine what the potential targets could be and how much could be lost if disaster struck. The first step in this process was to locate all of the measurable losses of buildings within the town. These buildings /assets were broken down into four categories: Critical Infrastructure, Business, High Consequence Populations/ Facilities and Hazardous Materials Facilities. The categories were then broken down even further into several subcategories: Bridges/ Overpasses, Campgrounds, Churches, Clinics-Medical Facilities, Communications Towers, Emergency Response Agencies, Farms, Federal Facilities, Housing Facilities, Large Businesses Major Road Systems, Recreation Areas, Restaurants, Schools, State Facilities, Subdivisions, Town Properties, and Utilities. Each listing has its address, plat, lot, National Flood Insurance Plan (NFIP) map number and hazard abbreviation code.

Hazard Type	***Abbreviation Code***
Coastal Storm	C
Tropical Cyclone	TC
Dam Failure	DF
Drought	D
Earthquake	E
Extreme Heat	EH
Flood	F
Hailstorm	H
Severe Thunderstorm	TS
Severe Winter Storm	WS
Tornado	T
Wildfire	WF
Windstorm	W

Critical Infrastructure

Critical Infrastructure is defined as those structures or facilities that are absolutely critical to the smooth operation of town government. The loss of any of these facilities would result in the paralysis of Hopkinton and could very easily contribute to loss of life.

Emergency Response Agencies

Name	Address	Plat / Lot	NFIP map#	Hazard Code
Ashaway Ambulance Association.	72 High St.	4/21C	440028 0007 B	C,TC,E,TS,WS,T,WF,W,D
Ashaway Vol. Fire Association	213 Main St.	25/300	440028 0007 B	C,TC,E,TS,WS,T,WF,W,D

Hope Valley Ambulance	5 Fairview Ave.	28/15	440028 0004 B	C,TC,E,TS,WS,T,WF,W,D
Hope Valley-Wyoming Fire District	996 Main St.	27/176A	440028 0004 B	C,TC,E,TS,WS,T,WF,W,D
Hopkinton Emergency Management Agency	406 Woodville Rd	7/35	440028 0005 B	C,TC,E,TS,WS,T,WF,W,D
Hopkinton Police Department	406 Woodville Rd.	7/35	440028 0005 B	C,TC,E,TS,WS,T,WF,W,D,H
Hopkinton Public Works	395A Woodville Rd.	7/45	440028 0005 B	C,TC,E,TS,WS,T,WF,W,D,H

Town Facilities

Name	Address	Plat / Lot	NFIP map #	Hazard Code
Town Hall	1 Townhouse Rd.	26/48	440028 0005 B	C,TC,E,TS,WS,T,WF,W,D
Crandall House	190 Main St	24/4	440028 0007 B	C,TC,E,TS,WS,T,WF,W,D
Ashaway School	12 A/B Hillside	24/110	440028 0007 B	C,TC,E,TS,WS,T,WF,W,D
Hope Valley School	15 Thelma Dr.	27/132	440028 0004 B	C,TC,E,TS,WS,T,WF,W,D
Animal Shelter.	395 B Woodville Rd.	7/45	440028 0005 B	C,TC,E,TS,WS,T,WF,W,D
DPW/Bldg –Zoning	395 A Woodville Rd.	7/45	440028 0005 B	C,TC,E,TS,WS,T,WF,W,D,H
Salt Storage Shed	395 Woodville Rd.	7/45	440028 0005 B	C,TC,E,TS,WS,T,WF,W,D
Town Fuel Depot	395 Woodville Rd.	7/45	440028 0005 B	C,TC,E,TS,WS,T,WF,W,D
Thayer House	482 Main St.	26/47	440028 0005 B	C,TC,E,TS,WS,T,WF,W,D
Recreation Building	188 Main St.	24/5	440028 0007 B	C,TC,E,TS,WS,T,WF,W,D
Police Headquarters	406 Woodville Rd.	7/35	440028 0005 B	C,TC,E,TS,WS,T,WF,W,D,H

Shelters

Name	Address	Plat/ Lot	NFIP Map #	Hazard Code
Ashaway School	12 A/B Hillside Ave.	24/110	440028 0007 B	C,TC,E,TS,WS,T,WF,W,D
Hope Valley School	15 Thelma Dr.	27/132	440028 0004 B	C,TC,E,TS,WS,T,WF,W,D
Recreation Center	188 Main St.	24/5	440028 0007 B	C,TC,E,TS,WS,T,W,D

Emergency Operations Centers

Name	Address	Plat / Lot	NFIP Map #	Hazard Code
Police Headquarters	406 Woodville Rd	7/35	440028 0005 B	C,TC,E,TS,WS,T,WF,W,D,H
Town Hall	1 Townhouse Rd.	26/48	440028 0005 B	C,TC,E,TS,WS,T,WF,W,D,

Clinics / Medical Facilities

Name	Address	Plat/ Lot	NFIP Map #	Hazard Code
Wood River Health Services	823 Main St.	14/47	440028 0004 B	C,TC,E,TS,WS,T,WF,W,D
South County Family Medical	1111 Main St.	28/133	440028 0004 B	C,TC,E,TS,WS,T,WF,W,D
Pilny-Dufour Dentist	1097 Main St	28/130	440028 0004 B	C,TC,E,TS,WS,T,WF,W,D

Communications Towers

Name	Address	Plat /Lot	NFIP Map #	Hazard Code
Industrial Communications	247 North Rd.	13/0002	440028 0003 B	C,TC,E,TS,WS,T,WF,W,D
MCI Tower	395 Woodville Rd	7/45	440028 0005 B	C,TC,E,TS,WS,T,WF,W,D
Ashaway Volunteer Fire Association	213 Main St.	25/30	440028 0007 B	C,TC,E,TS,WS,T,WF,W,D
Hope Valley-Wyoming Fire District	996 Main St.	27/176	440028 0004 B	C,TC,E,TS,WS,T,WF,W,D
Hopkinton Police Headquarters	406 Woodville Rd.	7/35	440028 0005 B	C,TC,E,TS,WS,T,WF,W,D,H

Water Supply Systems

Name	Address	NFIP Map #	Hazard Code
Echleston Plat	Lynn Lane	440028 0007 B	C,TC,E,TS,WS,T,WF,W,D,F
Canonchet Cliffs	805 Main St	440028 0004 B	C,TC,E,TS,WS,T,WF,W,D
Hope Valley Village	Main St.	440028 0002/4 B	C,TC,E,TS,WS,T,WF,W,D

Dry Hydrants

Name	Address	Plat /Lot	NFIP Map #	Hazard Code
Line and Twine Lower	24 Laurel St.	25/1	440028 0007 B	C,TC,E,TS,WS,T,WF,W,D,F
Woodville Bridge	114 Woodville Rd.	Adj. to 9/11	440028 0006 B	C,TC,E,TS,WS,T,WF,W,D
	Mechanic St.		440028 0004 B	C,TC,E,TS,WS,T,WF,W,D

Major Roadway Systems

Name	NFIP Map #	Hazard Code
Route 95 –North	440028 0004/5/6/7 B	C,TC,E,TS,WS,T,WF,W
Route 95 South	440028 0004/5/6/7 B	C,TC,E,TS,WS,T,WF,W
Main St. (Route 3)	440028 0002/4/5/6/7 B	C,TC,E,TS,WS,T,WF,W,F
High St. (Rte. 216)	440028 0007 B	C,TC,E,TS,WS,T,WF,W,F
Ashaway Rd (Rte 216)	440028 007/9 B	C,TC,E,TS,WS,T,WF,W,F
Alton Bradford Rd (Rte 91) –	440028 0004/6/8/9 B	C,TC,E,TS,WS,T,WF,W
Spring St. (Route 138)	440028 0001/2/4 B	C,TC,E,TS,WS,T,WF,W,F

Utilities

Name	Address	Plat /Lot	NFIP Map #	Hazard Code
Verizon	6 Ashaway Rd	24/1	440028 0007 B	C,TC,E,TS,WS,T,WF,W,D
Verizon	1084 Main St.	27/153	440028 0004 B	C,TC,E,TS,WS,T,WF,W,D
Narragansett Electric	31 Oak St	24/49	440028 0009 B	C,TC,E,TS,WS,T,WF,W,D
Narragansett Electric	1152 Main St.	28/143	440028 0004 B	C,TC,E,TS,WS,T,WF,W,D

Bridges/ Overpasses

Location	NFIP Map #	Hazard Code
Main St. – Over Rte 95 (exit 1)	440028 0007 B	C,TC,E,TS,WS,T,WF,W,D,F
Main St – Meeting House Bridge.	440028 0009 B	C,TC,E,TS,WS,T,WF,W,D,F
Woodville Alton – (over Rte. 95 @ Exit 2)	440028 0006 B	C,TC,E,TS,WS,T,WF,W,D,F
Laurel St. @ Potter Hill	440028 0009 B	C,TC,E,TS,WS,T,WF,W,D,F
Collins Rd	440028 0007 B	C,TC,E,TS,WS,T,WF,W,D,F
Chase Hill Rd near Ashaway Rd.	440028 0009 B	C,TC,E,TS,WS,T,WF,W,D,F
Woodville Alton Rd. At Golf Course	440028 0006 B	C,TC,E,TS,WS,T,WF,W,D,F
Burdickville Rd.	440028 0008 B	C,TC,E,TS,WS,T,WF,W,D,F
Wellstown Rd.	440028 0007 B	C,TC,E,TS,WS,T,WF,W,D,F
High St.	440028 000 B	C,TC,E,TS,WS,T,WF,W,D,F

Hazardous Material Facilities

It is important to note the locations of all of the businesses that report the storage of hazardous materials in Hopkinton. Each year these companies declare the type, location and amount of hazardous chemicals that they have on site via a process called the Tier II Reporting System. These reports are updated annually and are distributed to the local Fire Department, the Local Emergency Planning District (LEPC) and to the State Department of labor and Training in accordance with EPA regulation.

These sites need to be included in this plan because of the huge potential of damage and life loss after a disaster strikes and helps the chemicals the atmosphere uncontrollably. These sites are broken into Gas stations and petroleum depots, Extremely Hazardous Substance buildings and other hazardous materials

Gas Stations/ Oil Depots

Name	Address	Plat/ Lot	NFIP Map #	Hazard Code
Valero	216 Main St.	25-194	440028 0007 B	C,TC,E,TS,WS,T,WF,W,D
Morrone's Sunoco	206 Main St.	25/259	440028 0007 B	C,TC,E,TS,WS,T,WF,W,D
Edwards	1019 Main St.	27/137	440028 0004 B	C,TC,E,TS,WS,T,WF,W,D
Woodmansee Oil	8 Fairview Ave.	28/116	440028 0004 B	C,TC,E,TS,WS,T,WF,W,D
Johnsons Oil	99 Arcadia Rd.	18 / 22	440028 0002 B	C,TC,E,TS,WS,T,WF,W,D

Extremely Hazardous Substance Buildings

Name	Address	Plat/ Lot	NFIP Map	Hazard Code
Verizon	1084 Main St.	27/153	440028 0004 B	C,TC,E,TS,WS,T,WF,W,D,F
Verizon	6 Ashaway Rd.	24/1	440028 0007 B	C,TC,E,TS,WS,T,WF,W,D
Omnipoint	395 Woodville Rd.	7/45	440028 0005 B	C,TC,E,TS,WS,T,WF,W,D

Other Hazardous Materials Sites

Name	Address	Plat/ Lot	NFIP Map #	Hazard Code
Narragansett Substat.	31 Oak St.	24/49	440028 0009 B	C,TC,E,TS,WS,T,WF,W,D
Narragansett Substat.	1152 Main St.	28/143	440028 0004 B	C,TC,E,TS,WS,T,WF,W,D
Hopkinton DPW	395 Woodville Rd.	7/45	440028 0005 B	C,TC,E,TS,WS,T,WF,W,D
Western Mass Blasting	31 Gray Lane	4/12A	440028 0007 B	C,TC,E,TS,WS,T,WF,W,D,F

Salvage Yards

Name	Address	Plat/ Lot	NFIP Map #	Hazard Code
Perry Motors	126 Chase Hill Rd.	1/3	440028 0009 B	C,TC,E,TS,WS,T,WF,W,D,F
Edwards Garage	835 Main St.	14/48	440028 0004 B	C,TC,E,TS,WS,T,WF,W,D

High Consequence Populations/ Facilities

There are several facilities within Hopkinton that fall within this category. These are facilities that contain large groupings of people or populations that are less mobile and require longer times to evacuate. It is important that these populations be included so that they may be worked into capabilities that support early evacuation.

Housing Facilities

Name	Address	Plat / Lot	NFIP Map #	Hazard Code
Canonchet Cliffs 1	825 Main St.	14/47B	440028 0004 B	C,TC,E,TS,WS,T,WF,W,D
Canonchet Cliffs 2	805 Main St.	14/46E	440028 0004 B	C,TC,E,TS,WS,T,WF,W,D
Canonchet Cliffs 3	807 Main St.	14/47C	440028 0004 B	C,TC,E,TS,WS,T,WF,W,D
Saugatucket Springs	15 Town House Rd.	026/49	440028 0004 B	C,TC,E,TS,WS,T,WF,W,D

Schools / Daycare Facilities

Name	Address	Plat /Lot	NFIP Map #	Hazard Code
Ashaway School	12 A/B/C Hillside Ave.	24/110	440028 0009 B	C,TC,E,TS,WS,T,WF,W,D
Hope Valley School	15 Thelma Drive	27/132	440028 0004 B	C,TC,E,TS,WS,T,WF,W,D
Trinity Lutheran Preschool	110 High St.	4/7	440028 0007 B	C,TC,E,TS,WS,T,WF,W,D
Pilgrim Baptist Preschool	27 Chase Hill Rd.	2/3B	440028 0009 B	C,TC,E,TS,WS,T,WF,W,D
Frank Olean Center	472 Main St.	26/53	440028 0005 B	C,TC,E,TS,WS,T,WF,W,D,F
Ramrod Farms	40 Collins Rd.	5/71	440028 0008 B	C,TC,E,TS,WS,T,WF,W,D

Campgrounds

Name	Address	Number of Sites	Plat/Lot	NFIP Map #	Hazard Code
Holly Tree Campground	109 Ashaway Rd.	>140	2/42A	440028 0009 B	C,TC,E,TS,WS,T,WF,W,D,H,EH
Frontier Campground	180A/B Maxson Hill Rd.		7/51	440028 0007 B	C,TC,E,TS,WS,T,WF,W,D,H,EH
Greenwood Hills Campground	13A,B,C Newberry Lane	47	30/25	440028 0001 B	C,TC,E,TS,WS,T,WF,W,D,H,EH
Whispering Pines Campground	26A/B Woody Hill Rd	>200	17/21	440028 0002 B	C,TC,E,TS,WS,T,WF,W,D,H,EH
Camp Yawgoog (BSA)	61 Camp Yawgoog Rd.		16/27-28	440028 0001 B	C,TC,E,TS,WS,T,WF,W,D,H,EH

Businesses

Business is the backbone of any town. Not only do these facilities provide needed goods to residents or manufacture goods for others, they provide a major portion of taxes that support town services. It has also been said that a town only recovers from disaster as fast as its businesses do. This is very true in Hopkinton. Disasters can destroy buildings that house these companies and stores and it is very possible that they might not be able to rebuild in Hopkinton due to the costs to rebuild in the New England Region. That means that tax dollars that these companies bring to Hopkinton as well as goods and services could be lost to another locality. Some companies never recover from disaster and eventually go bankrupt. Both of these circumstances are tragic and potentially devastating to the Hopkinton economy.

Manufacturing

Name	Address	Plat / Lot	NFIP Map #	Hazard Code
Ashaway Line & Twine	9 / 24 Laurel St.	25 / 268, 1	440028 0007 B	C,TC,E,TS,WS,T,WF,W,D
Garrity Industries	50 Chase Hill Rd.	1 / 13	440028 0009 B	C,TC,E,TS,WS,T,WF,W,D
Coastal Industries	35 Mechanic St.	15/13B	440028 0004 B	C,TC,E,TS,WS,T,WF,W,D
Thames River Tube	64 High St.	25 / 134	440028 0007 B	C,TC,E,TS,WS,T,WF,W,D,F
Kaydee Industries	177 Skunk Hill Rd.	18/16	440028 0002 B	C,TC,E,TS,WS,T,WF,W,D
Comolli Granite	4 Chase Hill Rd.	1/23	440028 0009 B	C,TC,E,TS,WS,T,WF,W,D,F
Press Tech	125 Main St.	24/80	440028 0009 B	C,TC,E,TS,WS,T,WF,W,D
Rogovin Warehouses	105 A/B/C High St.	4 / 3A	440028 0007 B	C,TC,E,TS,WS,T,WF,W,D
Renova Lighting	15 Wellstown Rd.	04/22	440028 0007 B	C,TC,E,TS,WS,T,WF,W,D
Hopkinton Ind. Park	15 Gray Lane	04/12	440028 0007 B	C,TC,E,TS,WS,T,WF,W,D

Restaurants

Name	Address	Plat/ Lot	NFIP Map #	Hazard Code
Brick Oven Rest.	209 Main St.	25/299	440028 0007 B	C,TC,E,TS,WS,T,WF,W,D
Legends Café	14 Spring St.	27/99	440028 0004 B	C,TC,E,TS,WS,T,WF,W,D
Hoptown Pizza	229 Main St.	25/155A	440028 0007 B	C,TC,E,TS,WS,T,WF,W,D
Lucky House	32 Main St.	22/74A	440028 0009 B	C,TC,E,TS,WS,T,WF,W,D,F
West Bakery and Creamery	995 Main St.	27/101	440028 0004 B	C,TC,E,TS,WS,T,WF,W,D
Tim Hortons	231 Main	25/0155B	440028 0007 B	C,TC,E,TS,WS,T,WF,W,D
Gordon Green Post	Thelma Dr.	27/127	440028 0004 B	C,TC,E,TS,WS,T,WF,W,D

Retail

Name	Address	Plat /Lot	NFIP Map #	Hazard Code
Fast Mart/ Valero	216 Main St.	25 / 194	440028 0007 B	C,TC,E,TS,WS,T,WF,W,D
Spring St. Market	1 Spring St	27/ 55	440028 0004 B	C,TC,E,TS,WS,T,WF,W,D
Ma and Pa's Grocery	1044 Main St.	27/ 163	440028 0004 B	C,TC,E,TS,WS,T,WF,W,D
Pete's Grocery	244 Ashaway	23/ 80	440028 0009 B	C,TC,E,TS,WS,T,WF,W,D
Peoples Liquor Warehouse	229 Main St.	25 / 155	440028 0007 B	C,TC,E,TS,WS,T,WF,W,D
Finish Line Signs	28 Main St.	22/ 74K	440028 0009 B	C,TC,E,TS,WS,T,WF,W,D,F
Hopkinton General Store	493 Main St.	26 / 15	440028 0005 B	C,TC,E,TS,WS,T,WF,W,D
Morrone's Sunoco	206 Main St.	25 / 259	440028 0007 B	C,TC,E,TS,WS,T,WF,W,D
Edwards Garage	835 Main St.	14 / 48	440028 0004 B	C,TC,E,TS,WS,T,WF,W,D
Barretts	1019 Main	27 / 137	440028 0004 B	C,TC,E,TS,WS,T,WF,W,D
Ure Outfitters	1009 Main St.	27/ 103	440028 0004 B	C,TC,E,TS,WS,T,WF,W,D,DF,F
Hack and Livery General Store	1006 Main St.	27/ 175	440028 0004 B	C,TC,E,TS,WS,T,WF,W,D
Chippers Cycles	138 Main St.	24/ 34	440028 0009 B	C,TC,E,TS,WS,T,WF,W,D,F
Bob's Cycle Shop	28 Main St.	22 / 74K	440028 0009 B	C,TC,E,TS,WS,T,WF,W,D,F
Auto sales	26 Main St.	22 / 75	440028 0009 B	C,TC,E,TS,WS,T,WF,W,D,F
Village Video	211 Main St.	25/ 299	440028 0007 B	C,TC,E,TS,WS,T,WF,W,D

Farms

Name	Address	Map / Lot	NFIP Map #	Hazard Code
Tomaquag Valley Dairy Farm	43 A/B Tomaquag Rd	3 / 2	440028 0007 B	C,TC,E,TS,WS,T,WF,W,D,H
Elmrock Farm	34A Kenyon Lane	7/48	440028 0007 B	C,TC,E,TS,WS,T,WF,W,D,H
Tomaquag Farm	Tomaquag Rd.		440028 0007 B	C,TC,E,TS,WS,T,WF,W,D,H
Blueberry Lane Farms	264 Woody Hill Rd.		440028 0004 B	C,TC,E,TS,WS,T,WF,W,D,H
John Card	273 Spring St.	30/36	440028 0004 B	C,TC,E,TS,WS,T,WF,W,D,H
Vadakin Farm Nursery	10 Tomaquag Rd.	23/44	440028 0007 B	C,TC,E,TS,WS,T,WF,W,D,H
Brook Farm	100 Woody Hill Rd.	20/15E	440028 0004 B	C,TC,E,TS,WS,T,WF,W,D,H
Woody Hill Farm	345 Woody Hill Rd.		440028 0007 B	C,TC,E,TS,WS,T,WF,W,D,H
Yawgoo Scout Reservation	61 Camp Yawgoo Rd.	16/27,28	440028 0007 B	C,TC,E,TS,WS,T,WF,W,D,H
John Anderson	94 Chase Hill Rd.	1/6	440028 0009 B	C,TC,E,TS,WS,T,WF,W,D,H

Other Facilities

There are many places in Hopkinton that do not fall within any of the previous categories but if they were damaged or involved during a disaster there could be a significant financial or other type of major impact. These facilities are; post offices, churches, cemeteries, recreation areas and golf courses.

Post Offices

Name	Address	Map/Lot	NFIP Map #	Hazard Code
Ashaway Post Office	129 Main Rd.	24/82A	440028 0009 B	C,TC,E,TS,WS,T,WF,W,D
Hopkinton Post Office	482 Main St.	26/47	440028 0005 B	C,TC,E,TS,WS,T,WF,W,D
Hope Valley Post Office	1027 Main St.	27/139	440028 0004 B	C,TC,E,TS,WS,T,WF,W,D
Rockville Post Office	322A Canonchet Rd.	30/43	440028 0001 B	C,TC,E,TS,WS,T,WF,W,D

Churches

Name	Address	Map/Lot	NFIP Map #	Hazard Code
St. Joseph's Church	1105 Main St.	28/132	440028 0004 B	C,TC,E,TS,WS,T,WF,W,D
Hopkinton Seventh Day Baptist Church	8A/B Church St	24/94	440028 0009 B	C,TC,E,TS,WS,T,WF,W,D
Chariho Southern Baptist Church	80 Alton Bradford Rd.	3/53A	440028 00010 B	C,TC,E,TS,WS,T,WF,W,D
Ananda Church of Self Realization	312 Tomaquag Rd.	8/16	440028 0007 B	C,TC,E,TS,WS,T,WF,W,D
Babcock Presbyterian	25 Maxson St.	24/159	440028 0009 B	C,TC,E,TS,WS,T,WF,W,D
Our Lady Of Victory Catholic Church	169A,B Main St.	24/98	440028 0009 B	C,TC,E,TS,WS,T,WF,W,D
St. Elizabeth's Chapel	63 Canonchet Rd.	14/3	440028 0005 B	C,TC,E,TS,WS,T,WF,W,D
Pilgrim Baptist Church	27 Chase Hill Rd.	2/3B	440028 0009 B	C,TC,E,TS,WS,T,WF,W,D
Hope Valley First Baptist Church	1059 Main St.	27/146	440028 0004 B	C,TC,E,TS,WS,T,WF,W,D
Rockville Seventh Day Baptist Church	281 Spring St.	30/40 30/8	440028 0003 B	C,TC,E,TS,WS,T,WF,W,D
Trinity Lutheran Church	110 High St.	4/7	440028 0007 B	C,TC,E,TS,WS,T,WF,W,D

Cemeteries

Name	Address	NFIP Map #	Hazard Code
Hopkinton First Cemetery	Old Hopkinton Cemetery Rd.	440028 000 B	C,TC,E,TS,WS,T,WF,W,D
River Bend Cemetery	Arcadia Rd.	440028 000 B	C,TC,E,TS,WS,T,WF,W,D

Recreation Areas

Name	Address	NFIP Map #	Hazard Code
Crandall Field	Main St.	440028 0007/9 B	C,TC,E,TS,WS,T,WF,W,D,F,H
Langworthy Field	Locustville Rd.	440028 0004 B	C,TC,E,TS,WS,T,WF,W,D
Dow Field	Main St.	440028 0004 B	C,TC,E,TS,WS,T,WF,W,D,F
Arcadia State Management Area	Arcadia Rd	440028 0002 B	C,TC,E,TS,WS,T,WF,W,D
Woodville Alton Boat Ramp	Woodville Alton Rd.	440028 0008 B	C,TC,E,TS,WS,T,WF,W,D,F

Golf Courses

Name	Address	Map / Lot	NFIP Map #	Hazard Code
Fenner Hill Golf Course	33 Wheeler Lane	15/9	440028 0004 B	C,TC,E,TS,WS,T,WF,W,D,H
Lindhbrook Golf Course	299 Woodville Alton Rd.	11/49,11/51	440028 0006 B	C,TC,E,TS,WS,T,WF,W,D,H
Wood River Golf Course	78A Woodville Alton Rd.	9/20	440028 0008 B	C,TC,E,TS,WS,T,WF,W,D,H
The Golf Pavilion	15 Frontier Rd.	07/62	440028 0007 B	C,TC,E,TS,WS,T,WF,W,D,H

Vulnerabilities of Hopkinton

When designing a hazard mitigation plan, it is extremely important to determine what the effect could be on a particular area from the potential hazards that are listed in the hazard analysis. A committee must take the properties and infrastructure and apply hazard scenarios to them. Then inferences must be made as to the potential losses that could be incurred after these “disasters”. These potential losses make up the vulnerability of a locality. The vulnerability refers to the predicted impact that a disaster could have on people, services and structures in the community.

This is the process that the Hopkinton Hazard Mitigation Committee used to determine the vulnerabilities of Hopkinton. In addition, other variables were added to the process. For example, potential economic, and social and environmental losses are discussed in the following segments. For the purpose of this analysis, only the six highest scoring hazards were used as scenarios; wildfire, tropical cyclone, coastal storm, severe thunderstorm and flood. Analysis of other hazards is done on a case by case basis and a more comprehensive analysis of all hazards and structures will be addressed in future plans.

Critical Infrastructure Analysis

As was stated above, critical infrastructure is defined as those structures or facilities that are absolutely critical to the smooth operation of town government. In Hopkinton, there are several buildings facilities and roadways that fall into this category.

The emergency response agencies in Hopkinton obviously will be affected by all of the hazards that are listed in this plan. On the occurrence of any of these hazards, all of the agencies will experience definite increases in public requests for their services as well as physical damage to their structures.

Severe Thunderstorm has the greatest potential for damage to town infrastructure. All of the emergency response buildings contain expensive electrical equipment and back-up generators that could be damaged by lightning strikes. In the past, all Hopkinton response agencies have experienced loss during severe thunderstorms. While most of these buildings are protected from surges, some of this protection often does not stand up to the awesome voltages produced by lightning. In addition, the responders themselves are put at great risk of death or injury answering calls during these storms. Storm damage totals for these storms could run into the thousands of dollars, not including any loss of life.

Wildfire is another hazard that would affect emergency infrastructure. With the exception of the Ashaway Volunteer Fire Association, all of the buildings are located adjacent to forest areas. Wildfires could consume buildings and property located within with losses running into the millions of dollars. It is also interesting to note that the only line of duty firefighter fatality in Hopkinton occurred while fighting a major wildfire.

Coastal storms, winter storms and tropical cyclones all may have similar significant influence on Hopkinton's response system. High winds, and significant amounts of precipitation can have a damaging impact on the buildings and the response equipment. Hopkinton's entire critical infrastructure has been able to withstand significant events like Hurricanes Gloria and Bob, as well as several severe coastal storms. The Hopkinton Police Headquarters and EOC, constructed in 2004, have not been tested by any severe weather events but were built to the latest construction and code standards and therefore should be able to weather most events.

Flood events should not influence response operations in Hopkinton, with the exception of the Hope Valley –Wyoming Fire District headquarters. An extreme flood will cause the river, directly adjacent to the station, to crest and flood the parking area and perhaps cause flooding into the station. If this were the case, it is likely that operations might need to be relocated temporarily until flooding was to recede. Also, much of Hopkinton is not serviced by a municipal water supply system. Therefore, there are few municipal fire hydrants but instead, dry hydrants are located adjacent to many rivers and ponds. If these streams or ponds are affected by flood, these dry hydrants might not be usable. If that were the case, homes involved in fire could potentially suffer greater losses due to the extension of time acquiring an adequate water supply.

Besides the emergency response agencies, there are many other pieces of Town infrastructure that have the potential for effect during one of the hazards listed. Town offices such as the Town Hall, Thayer House and the Crandall House are all older structures that could be subjected to damage by wildfires and severe weather events. While all of these structures have all of the major Rhode Island hurricanes and blizzards, it is important to note that all of these building were not constructed with modern techniques or codes and all are showing significant signs of their ages. Besides the millions of dollars that would be needed to replace these important town government components, one must realize that irreplaceable records are stored in all of these buildings and the temporary loss of town services would be inconvenient if not costly.

There are five communications towers located within Hopkinton. While there is a factor of safety built into all of these structures, thousands to millions of dollars could be lost if any of them were to collapse. This includes the loss of equipment, the damage caused to surrounding property but also any revenue losses caused by service interruptions
.
All major roadways, bridges and overpasses are important to the infrastructure of the Town of Hopkinton. It is obvious that all of the hazards profiled in this plan affect all of the travel routes. Downed trees and power lines, flooded areas, washouts, snow and ice and hazards caused by fire all impact the safe travel on roadways in Hopkinton. While the average storm is handled well by our town's service providers, disaster quality storms overwhelm the resources that are available and roads tend to get blocked. When this happens, the costs can be great. Emergency medical, fire suppression and police services that depend on seconds are unable to reach residents in a timely fashion when emergencies occur. In addition, citizens who are traveling on these roads could possibly be subjected to serious injury or death when they come into contact with these road

hazards. Finally, evacuations could be hampered if access roads are blocked, causing unnecessary delays and potential deaths.

Hopkinton currently utilizes four separate facilities for the temporary shelter of its residents. These shelters are:

- Chariho Middle School (Primary)
- Ashaway Elementary School
- Hope Valley School (Limited)
- Hopkinton Recreation Center (Limited)

With the exception of the Chariho Middle School (CMS), all of the shelters are located in the town and are not located within flood zones. The CMS shelter is shared by the towns of Hopkinton, Richmond and Charlestown and can hold a large amount of residents if needed. Unfortunately, this shelter is fairly remote from some areas and evacuation routes leading there must be maintained. These shelter routes are:

- Main St.
- Ashaway Rd.
- Alton-Bradford Rd.
- Woodville Rd.
- Collins Rd.
- Woodville-Alton Rd.
- Spring St.
- Mechanic St. (Switch Rd. is in Richmond and would need maintenance by the Richmond DPW).

The Ashaway Elementary School is designated as a shelter in Hopkinton. While it is not as large as the CMS shelter, it can be used for overflow or for small scale sheltering. Therefore the following roads must also remain cleared:

- Hillside Ave.

The Hope Valley Elementary School is listed as a secondary shelter in Hopkinton. There is no backup power to the facility so; it should be used only as a last resort. Therefore the following roads must remain cleared;

- Thelma Dr.

The Hopkinton Recreation Center is also listed as a secondary shelter. This shelter also does not have emergency power and has a very low capacity, however, the facility is air conditioned. No other roads need maintenance to open this shelter.

Socio-economic Analysis

There are many factors that determine how fast an area recovers from a significant disaster. Of these factors the socio-economic factors are probably the most imperative. If the residents of an area are not able to bounce back from their losses, the town will also experience a great deal of hardship during the recovery phase of disaster. The socio-economic factors that influence recovery the most are population growth, density, poverty, the number of renters in a community, the number of disabled or elderly, non-English speakers and persons who lack insurance.

In Hopkinton, the socio-economic factors as of Census 2000 are as follows:

Population – 7836
Number of housing units - 3112
Density – 182.3 persons per square mile
Number of elderly persons – 870 (11%)
Median household income - $52,181
Per capita income - $23,835
Number of persons living below poverty line – 376 (4.8%)

Potential Property Loss Estimations

It is extremely difficult to determine what the dollar values of losses would be if any of the potential hazards struck Hopkinton. There are many factors that figure into losses during disaster events such as whether there is total or partial damage to structures, is the property usable afterwards, were possessions lost, was business equipment destroyed, loss of profits, etc. Without these other factors, an accurate potential property loss cannot be tallied. Also, as we have seen with many disasters, random properties are sometimes spared while all of the properties around them are destroyed. There is no way to predict these random events.

That being said, the Hopkinton Hazard mitigation Committee has chosen some properties such as town owned buildings, emergency facilities and randomly chosen businesses that have the potential of affecting Hopkinton if disaster struck. This gives us a basic idea of how bad things could get relative to disaster losses.

Emergency Response Facilities

Property - *Ashaway Ambulance Association*
Building Value $ 177,900
Total Value- $296, 000
Other Potential Losses Two Ambulance Vehicles with associated Equipment – Records – Possible life loss (staff)

Property - *Ashaway Volunteer Fire Association Headquarters*
Building Value $ 1,330,100
Total Value- $ 1,565,300
Other Potential Losses Fire Apparatus, - Fire Alarm Panel – Records – Fire District Offices – Protective Gear – Air Station - Possible Life Loss (Staff)

Property - *Hope Valley Ambulance Squad*
Building Value $ 277,900
Total Value- $ 380,100
Other Potential Losses Ambulance Vehicles / Equipment – Records – Possible Life Loss (Staff)

Property - *Hope Valley Wyoming Fire District Headquarters*
Building Value $717,600
Total Value- $820,600
Other Potential Losses Fire Apparatus, Fire Alarm Panel, Records, Fire District Offices, Protective Gear, Hazmat Trailers, Possible Life Loss (Staff)

Property - *Hopkinton Police Headquarters*
Building Value $1,372,500
Total Value- $1,489,500
Other Potential Losses Police Vehicles – Records – Communications Center- Life Loss (Staff/ prisoners) EOC – EMA Headquarters

Other Town Facilities

Property - *Town Hall*
Building Value $303,200
Total Value- $403,600
Other Potential Losses Records, Potential Life Loss (Staff, visitors) Meeting Room

Property - *Thayer House*
Building Value $357,600
Total Value- $877,600
Other Potential Losses Records, Mail Facility, Potential Life Loss (Staff)

Property - *Crandall House*
Building Value $ 385,100
Total Value- $ 572,100
Other Potential Losses Potential Life Loss (Staff, visitors)

Property - *DPW Building*
Building Value $ 476,500
Total Value- $ 773,400
Other Potential Losses DPW Equipment, Building/Zoning Records Fuel Depot, Salt Sheds, Potential life Loss (Staff)

Hopkinton Business Sample

Property - *Wood River Health Services*
Building Value $ 931,900
Total Value $ 1,452,300
Other Potential Losses Potential Life Loss, Records, Medical Equipment, Only Medical Facility in Town

Property - *URE Outfitters*
Building Value $ 735,300
Total Value $ 897,000
Other Potential Losses Potential Life Loss (Staff/Customers), Stock, Records

Property - *Ashaway Line and Twine*
Building Value $ 1,063,100
Total Value $ 1,365,900
Other Potential Losses Potential Life Loss (Staff), Machinery, Records, Stock

Property - *KSL Realty Inc*.
Building Value $ 677,100
Total Value $ 1,383,300
Other Potential Losses Potential Life Loss (Staff/Customers) Stock, Equipment

The loss of one or many of these facilities could have a severe economic and social impact to Hopkinton. Once again there is no way to determine what impact a significant life loss could have to the town and surrounding areas. It is obvious, however, that all of the effects of any type of major disaster in Hopkinton would be felt for several years afterwards.

HOPKINTON HAZARD MITIGATION PLAN
CHAPTER 7 – FLOOD PLAINS

Floodplain Management

For a hazard mitigation plan to be effective, it is crucial that a community participate in effective floodplain management program. There are many different ways that a community can manage their flood prone areas.

Hopkinton has a relatively small floodplain area in comparison to other communities in Rhode Island. The Town has chosen several methods to lessen the affects of floods in Hopkinton. The best way to prevent flood damage to property is to prevent the loss before it happens. Therefore, building in areas that are flood prone must be regulated. Hopkinton has a thorough process to assure this. The building inspector's office is the first line of defense in this case. The office reviews all prospective building plans and determines whether the construction would potentially occur in regulated areas and if improper construction techniques would be used. Hopkinton and Rhode Island's building codes are clear and give the building inspector the tools needed to make effective decisions regarding floodplain construction. The Hopkinton Building inspector also has the power to deny building plans if necessary.

If a property owner feels that the decision made by the building inspector is wrong or was made unfairly, they have the right to bring their concerns to the town's planning

committee and apply for a variance to the zoning. A variance would allow an owner to build in accordance with a different zone provided board approved allowances are met. In addition, one could contest the decision made to the board or to the town council and request investigation. In all of these cases, great lengths are taken so that construction does not occur in floodplain areas.

Finally, Hopkinton is an active participant in the National Flood Insurance Program. The U.S. Congress established the National Flood Insurance Program (NFIP) with the passage of the National Flood Insurance Act of 1968. The NFIP is a Federal program enabling property owners in participating communities to purchase insurance as protection against flood losses in exchange for State and community floodplain management regulations that reduce future flood damages. Participation in the NFIP is based on an agreement between communities and the Federal Government. If a community adopts and enforces a floodplain management ordinance to reduce future flood risk to new construction in floodplains, the Federal Government will make flood insurance available within the community as a financial protection against flood losses. This insurance is designed to provide an insurance alternative to disaster assistance to reduce the escalating costs of repairing damage to buildings and their contents caused by floods.

As of July 1996, It was reported to FEMA that Hopkinton had a permanent, year-round population of 5392 persons, 1600 1-4 family structures and 100 other type structures. Of those, 1000 persons, 250 1-4 family structures and 10 other type structures were in flood hazard areas (1996 FEMA Flood Insurance Biannual Report). Hopkinton's most recent NFIP flood profile shows that there are 15 National Flood Insurance Program policies in town with premiums totaling $ 10,481 / year covering $23,313,300 dollars in property value. Since 1978, there have been 4 claims totaling $8,284. FEMA is in the process of updating all of Hopkinton's Flood maps.

Repetitive Losses

There have been no National Flood Insurance program insured structures that have filed two or more claims in the last 10 years in Hopkinton.

Floodplain Management in Hopkinton – 2010

The Town's Building Official is also the Hopkinton National flood Insurance Program (NFIP) coordinator. The NFIP standards are included in the State Building Code that is administered by the building official. In addition, The Hopkinton subdivision ordinances include standards that help prevent erosion and storm water flooding.

Flood Hazard Zone Designations

Zone A

Zone A is the flood insurance rate zone that corresponds to the 100-year floodplains that are determined in the Flood Insurance Study (FIS) by approximate methods. Because detailed hydraulic analyses are not performed for such areas, no Base Flood Elevations (BFE) or depths are shown within this zone. Mandatory flood insurance purchase requirements apply.

Hope Valley Fire Station Parking Lot – March 2010

Zone AE and A1-A30

Zones AE and A1-A30 are the flood insurance rate zones that correspond to the 100-year floodplains that are determined in the FIS by detailed methods. In most instances, BFEs derived from the detailed hydraulic analyses are shown at selected intervals within this zone. Mandatory flood insurance purchase requirements apply.

Zone AH

Zone AH is the flood insurance rate zone that corresponds to the areas of 100-year shallow flooding with a constant water-surface elevation (usually areas of ponding) where average depths are between 1 and 3 feet. The BFEs derived from the detailed hydraulic analyses are shown at selected intervals within this zone. Mandatory flood insurance purchase requirements apply.

Zone AO

Zone AO is the flood insurance rate zone that corresponds to the areas of 100-year shallow flooding (usually sheet flow on sloping terrain) where average depths are between 1 and 3 feet. The depth should be averaged along the cross section and then along the direction of flow to determine the extent of the zone. Average flood depths derived from the detailed hydraulic analyses are shown within this zone. In addition, alluvial fan flood hazards are shown as Zone AO on the FIRM. Mandatory flood insurance purchase requirements apply.

Zone AR

Zone AR is the flood insurance rate zone used to depict areas protected from flood hazards by flood control structures, such as a levee, that are being restored. FEMA will consider using the Zone AR designation for a community if the flood protection system has been deemed restorable by a Federal agency in consultation with a local project sponsor; a minimum level of flood protection is still provided to the community by the system; and restoration of the flood protection system is scheduled to begin within a designated time period and in accordance with a progress plan negotiated between the community and FEMA. Mandatory purchase requirements for flood insurance will apply in Zone AR, but the rate will not exceed the rate for unnumbered A zones if the structure is built in compliance with Zone AR floodplain management regulations.

For floodplain management in Zone AR areas, elevation is not required for improvements to existing structures. However, for new construction, the structure must be elevated (or flood proofed for non-residential structures) such that the lowest floor, including basement, is a maximum of 3 feet above the highest adjacent existing grade if the depth of the base flood elevation (BFE) does not exceed 5 feet at the proposed development site. For infill sites, rehabilitation of existing structures, or redevelopment of previously developed areas, there is a 3 foot elevation requirement regardless of the depth of the BFE at the project site.

The Zone AR designation will be removed and the restored flood control system shown as providing protection from the 1% annual chance flood on the NFIP map upon completion of the restoration project and submittal of all the necessary data to FEMA.

Zone A99

Zone A99 is the flood insurance rate zone that corresponds to areas of the 100-year floodplains that will be protected by a Federal flood protection system where construction has reached specified statutory milestones. No BFEs or depths are shown within this zone. Mandatory flood insurance purchase requirements apply.

Zone D

The Zone D designation on NFIP maps is used for areas where there are possible but undetermined flood hazards. In areas designated as Zone D, no analysis of flood hazards has been conducted. Mandatory flood insurance purchase requirements do not apply, but coverage is available. The flood insurance rates for properties in Zone D are commensurate with the uncertainty of the flood risk

Zone V

Zone V is the flood insurance rate zone that corresponds to the 100-year coastal floodplains that have additional hazards associated with storm waves. Because approximate hydraulic analyses are performed for such areas, no BFEs are shown within this zone. Mandatory flood insurance purchase requirements apply.

Zone VE

Zone VE is the flood insurance rate zone that corresponds to the 100-year coastal floodplains that have additional hazards associated with storm waves. BFEs derived from the detailed hydraulic analyses are shown at selected intervals within this zone. Mandatory flood insurance purchase requirements apply.

Zones B, C, and X

Zones B, C, and X are the flood insurance rate zones that correspond to areas outside the 100-year floodplains, areas of 100-year sheet flow flooding where average depths are less than 1 foot, areas of 100-year stream flooding where the contributing drainage area is less than 1 square mile, or areas protected from the 100-year flood by levees. No BFEs or depths are shown within this zone.

Hopkinton's Floodplains

River Gauge at Browning Mill Pond

Topographically, the town consists of rolling hills typically interspaced by broad, low gradient stream valleys containing extensive wetlands. The majority of the road system has been built on high ground, away from streams. Consequently, there has been little development of the floodplains.

Average precipitation in the Town of Hopkinton is about 44 inches per year. On a monthly basis, the precipitation is uniformly distributed throughout the year. Average high temperatures range from 70 degrees in July to 28 degrees (Fahrenheit) in January.

The Wood and Pawcatuck Rivers are the largest streams in the community. The Wood River originates at the outlet of Porter Pond in Sterling, Connecticut and flows southeast to its confluence with the Flat River in Exeter, Rhode Island. From this point, it flows south through Hope Valley and Woodville until it joins the Pawcatuck River south of Alton. The Wood River is the boundary between the Towns of Hopkinton and Richmond. It drains an area of 89 square miles. The Pawcatuck River originates at the outlet of Worden Pond in South Kingstown, Rhode Island, and flows southwest until it empties in a part of Ashaway and forms Hopkinton's southern boundary. The drainage area above the Hopkinton – North Stonington Connecticut corporate limits is 244 square miles.

Canonchet Brook, a tributary of the Wood River, Flows southeast through the central part of the Town of Hopkinton and drains an area of 7.7 Square miles. Tomaquag Brook, in the south central part of the community, flows south to its confluence with the Pawcatuck River and drains an area of 8.7 miles. The pattern of settlement in these basins is rural in character.

The Ashaway River and Mile Brook flow through the Village of Ashaway. The Ashaway River originates at the confluence of the Fall River and Parmenter Brook, 1-1/2 miles north of Ashaway, and flows south to its confluence with the Pawcatuck River at Ashaway. The drainage area above the confluence is 29.8 miles. Mile Brook rises about one half mile east of Ashaway and flows southwest to the Pawcatuck River. It drains 1.26 square miles.

Principal Flood Problems

Stream flow records collected in the vicinity by the USGS indicate annual peak flow can occur during any season of the year, but most frequently during the months December through April. The highest peak flows usually occur during March or April because of runoff from spring rains, at times augmented by snowmelt; or during September or October, due to runoff from Tropical Storms.

Based on historical information obtained for the USGS gauging stations on the Wood River in Hope Valley and on the Pawcatuck River at Westerly, the worst flood since 1886 was that of November 1927, which was caused by a tropical storm. No discharges were calculated for this flood; however the recurrence interval is estimated to be at least 200 years. A flood, which occurred in March 1968, was the second most severe. Peak discharges during this flood were 1720 cubic feet per second (cfs), on the Wood River at the Hope Valley USGS gage, and 4470 cfs on the Pawcatuck River at the Westerly gage. The recurrence intervals for the two floods were obtained from flood frequency distributions developed for these gauging stations.

Flood Protection Measures

There are no flood – control structures affecting stream flow in the Town of Hopkinton. The existing dams on the streams studied in detail are old mill dams (mills destroyed) and none are regulated. However, storm runoff intensity is greatly moderated by large areas of swamp, numerous ponds, and low gradient streams and the surrounding countryside.

Currently, Hopkinton has a Flood Plain and Water Course Protection Zone, which prohibits building below the 50-year flood elevation.

Summary of Discharges

FLOODING SOURCE AND LOCATION	DRAINAGE AREA(SQ.MI)	PEAK DISCHARGES (cfs)			
		10-year	50-year	100-year	500-year
Wood River					
Upstream of Alton	*87.1*	*1500*	*2150*	*2500*	*3400*
Upstream of Canonchet Br.	*77.5*	*1400*	*2000*	*2300*	*3100*
Hope Valley Gage	*72.4*	*1320*	*1900*	*2190*	*2970*
Upstream of Brushy Brook	*61.2*	*1150*	*1700*	*1950*	*2650*
Upstream of Barberville	*55.1*	*1100*	*1550*	*1800*	*2450*
Pawcatuck River					
Upstream of Ashaway River	*244.0*	*2700*	*3750*	*4300*	*5650*
Ashaway River					
At confluence with Pawcatuck River	*29.8*	*700*	*1000*	*1150*	*N/A*
Mile River					
At confluence with Pawcatuck River	*1.26*	*70*	*100*	*120*	*N/A*
Tomaquag Brook					
At confluence with Pawcatuck River	*8.70*	*290*	*410*	*480*	*N/A*
Upstream of first tributary	*6.84*	*240*	*350*	*400*	*N/A*
Upstream of Burdickville Rd.	*5.46*	*210*	*300*	*340*	*N/A*
Canonchet Brook					
At confluence with wood river	*7.73*	*260*	*380*	*440*	*N/A*
Upstream of Alton Rd.	*6.67*	*240*	*340*	*390*	*N/A*
Upstream of State Route 3	*5.46*	*210*	*300*	*340*	*N/A*
Canonchet Brook Tributary					
Upstream of Canonchet Road (downstream culvert)	*3.54*	*150*	*220*	*250*	*N/A*
Upstream of Canonchet Road (upstream culvert)	*.45*	*30*	*50*	*60*	*N/A*

Woodville Rd. Bridge at Richmond Line – March Floods 2010

HOPKINTON HAZARD MITIGATION PLAN
CHAPTER 8 – EXISTING HAZARD MITIGATION STRATEGIES

The Hopkinton Hazard mitigation Committee has identified several mitigation actions and projects that are already under way within Hopkinton. The committee has looked at each of these actions and has discussed whether these current actions are appropriate and effective. Table 8-1 shows the current activity, what is being done, in what location it benefits, who is currently completing the action, how effective that action is and improvements that could be made to that activity/program.

Table 8-1 Existing Mitigation Strategies

Activity	***Description***	***Completed By***	***Efficacy***	***Location***	***Improvements Needed***
Snow Plowing	Plow snow during and after each storm to keep roads open	DPW	Very Effective	Townwide	Some equipment due for replacement
Drain Maint.	Maintain all drainages as needed	DPW	Effective	Townwide	More funding needed
Road Repairs	Repair all town roads as needed.	DPW	Fair	Townwide	More Funding needed to repair roadways
Floodplain Ordinance	Ordinance that describes floodplain rules for subdivisions.	Town Council, Building /Zoning	Effective	Townwide	Ordinance needs review.
Numbering Ordinance	Requires all residents to number residences.	Building & Zoning	Effective	Townwide	Ordinance has no penalty – No one available to enforce
Vehicle Maintenance	All town vehicles are in routine Program	DPW	Effective	Townwide	Need large Facilities and more funds
Open Burning Ordinance	Regulates all open burning in town	Fire Dept, Police	Fair	Townwide	Need to match state statute
Building Codes	Regulates building near floodplain	Building and zoning	Effective	Townwide	
Zoning Regulation	Regulates Building	Building and Zoning	Effective	Townwide	
Fire Alarm Wire Maintenance	Repair Wires	Ashaway Fire Department	Effective	Townwide	Repair are expensive and parts Difficult to find
Fire Codes	Regulates Construction/ Inspections/ capacities	Fire Departments/ Building& Zoning	Effective	Townwide	Lack of Inspectors
Tree Cutbacks	Remove all trees or limbs that overhang wires or the roadway	Utility Companies / DPW	Fair	Townwide	Utility companies only cut near wires –over road limbs not cut unless extreme hazard – Lack of DPW manpower
Warning System	Phone based system used to notify residents of impending emergencies	Hopkinton EMA	Effective	Townwide	Needs Update

HOPKINTON HAZARD MITIGATION PLAN
CHAPTER 9 – HAZARD MITIGATION STRATEGY

As was identified in Chapter 8 of the Hopkinton Hazard Mitigation Plan, there are several things that Hopkinton already does in an effort to mitigate hazard. This is not to say that these are the only things that Hopkinton could do to protect its citizens. As time passes, as technology improves, and as the town changes our hazard mitigation strategy should change. Therefore the items/projects listed in Table 9-1 are the current additions to the existing mitigation efforts already under way. The following activities were considered when the committee determined the new mitigation strategies and are noted with each item on the table:

- Prevention
- Property Protection
- Structural Protection
- Emergency Services
- Public Information and involvement

Listed on the table are potential funding sources for each project. It is important to note that this list is not exhaustive nor does it assign responsibility for funding any of these projects. This section was merely added to give options available for fund acquisition.

When discussing the potential items it was important to determine whether or not the potential projects were feasible. To do this, the acronym S-T-A-P-L-E-E was applied to all projects. STAPLEE stands for the following:

S – Social *Is the project socially acceptable?*
The project must support the overall implementation strategy and specific mitigation actions. Therefore, the projects will have to be evaluated based on community acceptance

T – Technical *Is the project technically feasible?*
It is important to determine if the proposed action is technically feasible, will help to reduce losses in the long term and has minimal secondary impacts. Determine whether the alternative action is a whole or partial solution, or not a solution at all.

A – Administrative *Is there capability to implement actions?*
Under this part of the evaluation criteria, examine the anticipated staffing, funding and maintenance requirements for the mitigation action to determine if the jurisdiction has the personnel and administrative capabilities necessary to implement the action or whether outside help will be needed,

P – Political	*Are the actions politically acceptable?* Understanding how the current community and state political leadership feel about issues related to the environment, economic development, safety and emergency management. will provide valuable insight into the level of political support there is for mitigation activities and programs. Proposed mitigation objectives sometimes fail due to lack of political acceptability.
L – Legal	*Is there the authority to implement the proposed measures?* Without the appropriate legal authority, the action cannot lawfully be undertaken. When considering this criterion, determine whether your jurisdiction has the legal authority at the State, local level to implement the action or whether the action must pass new laws or regulations. Legal authority is likely to have a significant role later in the process when your community will have to determine how mitigation activities can best be carried out and to what extent mitigation policies and programs can be enforced.
E – Economic	*Consider the present economic base, projected growth, opportunity costs.* Cost effective mitigation actions that can be funded in current or upcoming budget cycles are, more likely to be implemented than mitigation actions requiring general obligations bonds or other instruments that would incur long term debt to a community. Local communities with tight budgets or budget shortfalls may be more willing to undertake a mitigation initiative if it can be funded, at least in part by outside sources. Big ticket mitigation actions such as large-scale acquisition and relocation are often considered for implementation in a post disaster scenario when additional Federal and state funding for mitigation is available.
Environmental	*Consider the impact to the environment* Impact on the environment is an important consideration because of the public desire for sustainable and environmentally healthy communities and the many statutory considerations such as NEPA, to keep in mind when using Federal funds.

TABLE 9-1 – NEW HOPKINTON HAZARD MITIGATION STRATEGY

PROJECT NUMBER	HAZARD TYPE	ACTIVITY TYPE	PROJECT TITLE	DESCRIPTION	POSSIBLE FUNDING SOURCES	LOCATION
1	FLOOD	Property Protection	South Drive Flood Control System	Flood Control System designed to prevent repetitive flood issue on South Drive	Federal Hazard Mitigation Grant Program	South Drive (Ashaway)
2	ALL	Emergency Services	Fire Alarm Wire Removal	Remove Hardwire system in Ashaway and replace with Radio System.	Grants, Donations, Businesses	Ashaway Fire District
3	Flood / Severe Winter Storm	Property Protection	Storm Drain Database and Map	Utilize GIS to develop a Storm drain database and Map	Town Funds, Federal Grants, State Grants,	Townwide
4	WILDFIRE	Prevention/ Public Information and Involvement.	Wildfire Prevention	Public relations campaign to advise residents about steps to prevent wildfire damage	Town Funds, Federal Grants, Private Grants, Donations	Townwide
5	ALL	Property Protection	EOC Fortification	Add shatter resistant coating to all windows and re-design HVAC system	Town Funds, Federal Grants	Police Headquarters
6	ALL	Emergency Services	Crandall / Town Hall Emergency Power.	Install appropriately sized generator to Crandall property – shelter / Alt EOC./ Town Hall	Town Funds, Federal Grants	Crandall Properties – Town Hall
7	ALL	Prevention	GIS Project Update	Update Current GIS Hardware and Software to meet standards and support new projects.	Town Funds, Federal Grants	Townwide
8	WILDFIRE	Property Protection	Open Burning Ordinance	Revise current burn ordinance to match State Code.	N/A	Townwide
9	ALL	Emergency Services	911 Ordinance Change	Revise current 911 numbering ordinance to add stricter penalty for non-compliance.	N/A	Townwide
10	ALL	Emergency Services	House Numbering Project	Install house numbers and posts at all residences	Federal Grants	Townwide

PROJECT NUMBER	HAZARD TYPE	ACTIVITY TYPE	PROJECT TITLE	DESCRIPTION	POSSIBLE FUNDING SOURCES	LOCATION
11	ALL	Public Information	Campground Evacuation Alarms	Install Special Alarms to notify campgrounds of impending tornadoes, severe weather, & wildfire.	Federal Grants Campground Owners	All Campgrounds
12	ALL	Prevention – Property Protection – Emergency Services	Volunteer Corps.	Establish large group of volunteers to assist with prevention and response.	Town Funds, Citizens Corp Grants, Other Grants	Townwide
13	Windstorm, Tropical Cyclone, Severe TS, Tornado, WF.	Prevention	Tree Cutbacks	Remove all trees or limbs that overhang wires or roadway.	Town funds, State grants, Federal Grants, Utilities	ALL AREAS (ROADS)
14	Wildfire	Property Protection	Cistern Ordinance	Develop an ordinance to dictate the design and construction of cisterns	N/A	Townwide

Explanation of Strategies

PROJECT # 1

Action 1 outlines a project that will control flooding in the Eccleston Plat section of the Village of Ashaway. Whenever heavy rain hits Hopkinton, the South Drive section of this plat is usually under a large amount of water. Many of the houses in the area are affected by this problem and some of them have attempted to perform their own mitigation in an attempt to cut down on property loss. However, homeowners unable to afford their own countermeasures still experience flood loss and damage each time there is significant rain. In addition, these residents request assistance from the Ashaway Fire Department for pumping and salvage assistance South Drive closes and remains so until all water recedes (sometimes for up to a week). Engineers have developed a system that will help accommodate the storm runoff and alleviate flood impact in this neighborhood.

PROJECT # 2

Project 2 affects the Ashaway Fire District and their fire alarm system. Ashaway currently utilizes a hardwire fire alarm communication system to transmit fire alarm signals from buildings and street boxes. The system uses old technology and is extremely costly to maintain. More importantly, a tropical cyclone, tornado or even a high wind storm could easily destroy the entire system and leave several buildings unprotected. Converting the system to a radio based system would prove to be much more resilient and less labor intensive.

PROJECT # 3

Project 3 involves creating a database of all of the drains and culverts in the Town and utilizing this information to develop a map of them. The Department of Public Works and the Town's GIS department will collaborate to gather all required information and apply them to the software and maps. This information will be important during floods and snowstorms so that DPW crews can be set into the field with proper locations of priority areas to keep clear preventing localized flood conditions. This project can be achieved with a minimum of funding by utilizing town manpower.

PROJECT # 4

Project 4 involves developing a town-wide informational campaign advising residents of the dangers of wildfires and list strategies and tasks that residents can do to mitigate the risks. The U.S. Forest Service and FEMA can be sources for information and strategies at little to no costs. These campaigns will be completed by the town's fire districts with assistance from other town departments.

PROJECT # 5

Project 5 involves fortification and upgrades to the Town's Emergency Operations Center. The EOC windows currently are unprotected from windblown debris and the Heating – ventilation and cooling system needs upgrades to provide adequate comfort and protection from contaminated outside air sources.

PROJECT# 6

Project 6 involves the installation of generators to both the Town Hall and the Crandall House facilities. Both buildings are integral parts of the Town's day to day infrastructure as well as temporary cooling shelters during heat emergencies as well. Back-up power is critical to continuity of operations.

PROJECT# 7

Project 7 involves an ongoing maintenance and upkeep to the Town GIS system. The town currently employs a person who is responsible for maintaining all town IT equipment as well as maintaining the website and GIS software. Current GIS is important for planning as well as for decision making during incidents and disasters. All of the information on the system should be frequently checked for accuracy. All GIS hardware and software should be frequently reviewed and updated to assure that we have everything necessary to complete the tasks. These tasks can be completed by the Town GIS/ IT Director and cost can be covered using Town funds and other grants.

PROJECT# 8

Project 8 involves reviewing and updating the Hopkinton open burning ordinance. Currently, there are both State and local ordinances on the books that are not in sync with each other. The updated ordinance needs to come in line with the State Law and it needs to address items such as emergency suspensions, campgrounds, fireplaces and outdoor furnaces. This project will help to prevent uncontrolled outdoor fires and needless calls to the Fire Departments. The Town public safety agencies will work together to update the language for presentation to the town Council.

PROJECT# 9

Project 9 involves reviewing and updating the current E911 ordinance. The updated ordinance needs to address the locations and types of numbers allowed and needs to add stricter penalties for non-compliance. Accurate and visible numbers aid Town emergency personnel when responding to emergencies and disasters. Successful responses can mitigate many disasters before they occur.

PROJECT# 10

Project 10 involves actually distributing numbered signs to all of the town businesses and residences. This will assure that all house numbers will be standard and in a common location.

PROJECT# 11

Project 11 involves warning systems at all of the Town Campgrounds. Currently the town uses phone-based emergency warning system called One-Call-Now. Unfortunately, emergencies that potentially involve the campgrounds may not get transmitted to the residents due to the lack of a 24 hour monitored phone. This could result in tragedy if no-one alerts those residents. An alternative manual system needs to be installed so that all campground residents know when there is potential for disaster.

PROJECT# 12

Project 11 involves the development and maintenance of a town wide corps of Disaster volunteers. Volunteers of all ages are needed to assist the many pre-disaster and post disaster tasks that arise during man-made and natural disasters. These volunteers will be trained at little to no cost using the Town's own trainers and grant supported training.

PROJECT# 13

Project 13 involves cutting the trees that overhang the town roadways. Currently, the trees and branches are routinely trimmed by companies that the utility companies contract with. Their responsibility begins and ends solely at those trees and branches near the overhead utility lines. In addition the DPW utilizes its own equipment to trim some of the others that could end up as road hazards. These activities need to continue so as to lessen the effects that wind events could leave. This one action is directly responsible for overall rapid recovery following a disaster.

PROJECT# 14

Project 14 involves developing a firefighting cistern ordinance for the Town. Currently, there are no regulations that dictate many of the aspects of firefighting cisterns and that can lead to situations where water is not readily available to fight fires. Upkeep, placement and responsibility should all be addressed in this ordinance.

HOPKINTON HAZARD MITIGATION PLAN
CHAPTER 10 – PLAN UPDATE AND EVALUATION

Now that Hopkinton has a completed plan, it is important that two things happen. First, the plan needs to be acted on and the specific mitigation tasks that are listed should be completed. There is no use having this document if no one plans to use it. Second, the Hopkinton Hazard Mitigation Committee needs to meet regularly to make sure that all aspects of this plan are carried out and that the plan remains current.

With these two items in mind, to stay compliant, the Hopkinton Hazard Mitigation Committee must meet regularly. The Hopkinton Emergency Management Director shall be responsible for maintaining a permanent Hazard Mitigation Committee and shall serve as the chairman of the committee. The Committee shall meet on a biannual basis.

At minimum the Committee shall consist of:

- Emergency Management Director
- Police Chief
- Ashaway Fire Chief
- Hope Valley Fire Chief
- Building Official
- Town Manager
- Town Council President
- Town Planner
- Public Works Director
- Business Owner (s)

The charge of the committee will be to maintain all aspects of the plan and to make changes to it as town needs and priorities change. Many portions of this plan will need revision as years pass.

As always, these meetings will be open to the public and notice will be placed in the appropriate newspapers, websites etc. Funds may need to be allocated in future budgets for posting costs and other applicable administrative costs. To ensure public participation, meetings will be posted at the following areas:

Hopkinton Town Hall
Hopkinton Police Headquarters
Hopkinton Post Office
Ashaway Post Office Hope
Valley Post Office Ashaway
Fire Headquarters
RI Secretary of State's Website
The Westerly Sun

Before a mitigation plan can truly be maintained, it is important to evaluate the results of past mitigation activities. This evaluation will be the basis for plan update. Data that is already maintained by the building inspector and public works departments should be utilized to determine whether past weather event impacts were changed by mitigation projects. Also, an attempt to acquire accurate weather records for the Hopkinton area will be made.

Monitoring and Evaluating the Plan

The Hopkinton Hazard Mitigation committee realizes that for this plan to be successful, the committee needs to monitor whether the strategies in this plan are being utilized and whether the actions carried out actually mitigate hazards. As was stated before, there is no sense having this document if it is not used. In addition, there is no use in developing mitigation strategies that do not mitigate hazards. The Hopkinton hazard committee Chairman will oversee projects and make sure that they follow our mitigation strategies and will watch severe storms and determine if mitigation projects actually worked. In addition, any natural disasters that occur within the plan period will also be monitored and after action reports will be generated to monitor the efficacy of mitigation projects. The Committee, as well as the public, will meet annually to discuss these projects and events and, as a group, decide whether plan changes need to be made. Any major changes to mitigation strategies or the plan as a whole shall be brought before and approved by the Town Council.

Incorporation into Existing Plans

Upon approval by the Town council, Rhode Island Emergency Management Agency and the Federal Emergency Management Agency, this plan will be submitted to the Hopkinton Planning commission for integration into the Hopkinton Comprehensive Plan. It is imperative that all long range planning utilizes the mitigation strategies set forth in this plan so that future town projects are developed in hazard free locations.

In addition, the planning department will determine how this plan can be adopted into other existing Town plans and will determine how other plans can be integrated into the mitigation plan.

Five year Update Timetable

2011
Approve and begin implementing plan
Monitor projects as needed

2012
Continue projects according to plans
Monitor projects and weather events
Convene Hopkinton Hazard mitigation Committee Meeting

2013
Continue projects according to plans
Monitor projects and weather events
Convene Hopkinton Hazard Mitigation Committee Meeting

2014
Continue projects according to plans
Monitor projects and weather events
Convene Hopkinton Hazard Mitigation Committee Meeting
Determine 2015 plan requirements
Develop new mitigation projects for updated plan

2015
January- March - Update plan according to new standards
April – Committee meetings to adopt changes
May – Town Council for approval/ adoption
June – FEMA review and approval
July- Plan implementation

HOPKINTON HAZARD MITIGATION PLAN
CHAPTER 11 – APPENDIX

Appendix A
Storm and Unusual Weather Data for Washington County

All data provided by the National Weather Service

Date	Time	Damage Est.	Character of Storm	Description
1-07/08-96	1700	n/a	Heavy Snow	24 inches
1-19-96	1400	n/a	High Winds	53 mph
1-27-96	1300	n/a	High Winds	50 mph
2-02/03-96	2200	n/a	Heavy Snow	8 inches
2-16/17-96	1200	n/a	Heavy Snow	7 inches
2-25-96	0730	n/a	High Winds	70 mph
3-02-96	0900	n/a	Heavy Snow	7.5 inches
3-03-96	0500	n/a	Snow Squalls	1” + 50mph
4-09/10-96	1800	n/a	Heavy Snow	7 inches
7-13-96	1400	n/a	High Winds	55 mph
7-13-96	1400	n/a	Waterspout	(Point Judith)
8-24-96	1025	n/a	Thunderstorm Wind	52 mph
9-18-96	0000	n/a	Heavy Rain	3.5 inches
10-08/09-96	1900	n/a	Heavy Rain	2.72 inches
10-08/09-96	2200	n/a	Strong Winds	40 mph
10-19/20-96	1300	n/a	High Winds	60 mph
10-20/21-96	0200	n/a	Heavy Rain	n/a
12-02-96	0200	n/a	Strong Wind	50 mph
12-07/08-96	1900	n/a	Heavy Rain	2 inches
12-24/25-96	1200	n/a	Strong Wind	50 mph
1-10-97	0500	n/a	Strong Wind	50 mph
1-10-97	0600	n/a	Coastal Flooding	1-2 feet
3-06-97	0800	n/a	Strong Winds	62 mph
3-26-97	0000	n/a	Strong winds	60 mph
3-31-97	1500	n/a	Strong Winds	70 mph
3-31-97	2200	n/a	Heavy Snow	1 foot
4-01-97	0000	100K	Heavy Snow	4-30 inches
4-01-97	0000	n/a	Strong Wind	n/a
7-25-97	1200	n/a	Gusty Winds	50 mph
8-21-97	0700	n/a	Strong winds	55 mph
8-29-97	1300	n/a	Heavy Rains	5 ½ inches
8-29-97	1415	n/a	Flash Floods	Charlestown
11-01-97	1200	n/a	Heavy Rain	2 inches
11-01-97	1700	n/a	Strong winds	n/a

11-01-97	2000	n/a	High Winds	79 mph
11-27-97	0500	n/a	Strong Winds	50 mph
12-02-97	0200	n/a	Strong Winds	50 mph
12-14-97	1100	n/a	Strong Winds	51 mph
12-29/30-97	1900	n/a	Strong Winds	55 mph
2-04/05-98	2300	n/a	Strong Winds	n/a
2-05-98	0600	n/a	High Winds	55 mph
2-18-98	0000	n/a	Heavy Rain	2.58
2-18-98	0000	n/a	Strong Winds	40 mph
2-18-98	1400	400k	Flash Floods	n/a
2-24/25-98	0000	n/a	Strong Winds	52 mph
3-08/09-98	1700	n/a	Heavy Rains	3.30 inches
3-09-98	0800	n/a	Strong winds	55 mph
3-12-98	1400	n/a	Strong winds	50 mph
3-21/22-98	0600	n/a	Strong winds	49 mph
3-26-98	1000	n/a	Strong Winds	50 mph
4-01/02-98	1500	n/a	Heavy Rain	2.50 inches
4-09/10-98	2200	n/a	Strong winds	51 mph
6-13/14-98	0000	n/a	Heavy rain	6-8 inches
6-19-98	1354	n/a	Hail	0.75
6-27-98	1400	n/a	Strong wind	35-45 mph
6-30-98	2019	n/a	Hail	2.75 inch –Richmond
6-30-98	2035	n/a	Hail	.75 inch
9-27-98	2025	n/a	Thunderstorm wind	50 mph
10-8/11-98	1200	n/a	Heavy rain	4.84 inches
11-11-98	0500	n/a	Strong winds	52 mph
11-26-98	1200	n/a	Strong winds	43 mph
1-03-99	1100	n/a	Heavy rain	2-3 inches
1-03-99	1300	n/a	Strong winds	51 mph
1-15-99	0900	n/a	Strong winds	55 mph
1-15-99	0900	n/a	Heavy rains	2 inches
1-18-99	1900	n/a	Strong winds	55 mph
2-02/03-99	1800	n/a	Strong winds	47 mph
2-25/26-99	0000	n/a	Heavy snow	13.5 inches
3-04-99	0100	n/a	Strong winds	51 mph
3-15-99	0000	n/a	Heavy snow	10 inches
3-22-99	0000	n/a	Strong winds	50 mph
5-23/24-99	1700	n/a	Heavy Rain	3.15 inches
9-10-99	0700	n/a	Heavy rain	6-7 inches
9-16/17-99	1500	n/a	Heavy rain	7.12 inches
9-16-99	1723	n/a	High winds	50 mph
9-30-99	0900	n/a	Strong winds	30 mph
10-14-99	1000	n/a	Strong winds	50 mph
10-18-99	1000	n/a	Strong winds	55 mph
11-02/03-99	2330	n/a	Strong winds	60 mph

12-30-99	0600	n/a	Strong winds	35 mph
1-10-00	1800	n/a	Strong winds	50 mph
1-16/17-00	1700	n/a	Strong winds	55 mph
1-21/22-00	1800	n/a	Strong winds	50 mph
2-14-00	1130	n/a	Strong winds	50 mph
2-18/19-00	1300	n/a	Heavy snow	6 inches
3-11/12-00	1500	n/a	Heavy rain	2-4 inches
4-08-00	1100	n/a	Strong winds	55 mph
5-18-00	1200	n/a	Strong winds	31 mph
5-24-00	1952	n/a	Hail	0.88 inches
6-06/07-00	2100	n/a	Strong winds	47 mph
12-12-00	0800	n/a	High wind	50 mph
12-17-00	1100	n/a	High wind	50 mph
12-30/31-00	1300	n/a	Strong wind	50 mph
1-20/21-01	2100	n/a	Heavy snow	7 inches
2-10-01	0100	n/a	Strong wind	55 mph
2-25-01	0600	n/a	Freezing rain	n/a
3-30-01	2200	n/a	Heavy rain	4.37 inches
6-11-01	2300	10 K(Chas)	Lightning	n/a
6-11-01	2305	n/a	Thunderstorm wind	50 mph
6-16-02	1700	5 K (Hop)	Thunderstorm winds	50 mph
12-05/06-02	1200	n/a	Heavy snow	6 inches
02-07/08-03	0500	n/a	Winter storm	6-12 Inches
02-17-18-03	1100	n/a	Winter storm	19 inches
03-06-03	1100	50 K	Winter storm	9 inches
03-29/30-03	1800	n/a	Heavy rain	2.27 inches
12-05-03	2200	n/a	Winter Storm	n/a
12-26-04	1500	n/a	Winter Storm	n/a
01-22-05	1500	n/a	Winter Storm	n/a
02-24-05	1800	n/a	Heavy Snow	n/a
10-15-05	0507	1.6M	Flood	n/a
02-12-06	0600	n/a	Winter Storm	n/a
07-18-06	2150	n/a	Hail/Thunderstorm	1 in
10-28-06	1440	2K	Flood	n/a
03-02-07	1100	5K	Flood	n/a
03-16-07	0700	n/a	Winter Storm	n/a
04-16-07	0612	10K	Floods	n/a
03-05-08	0635	n/a	Thunderstorm / Wind	55 kts.
12-19-08	1354	1K	Heavy Snow	n/a
12-31-08	0900	n/a	Heavy Snow	n/a
03-01-09	2300	n/a	Heavy Snow	n/a
07-01-09	1149	20K	Flood	n/a
12-19-09	2000	n/a	Heavy Snow	n/a
02-10-10	1100	n/a	Winter Storm	1 MVA Fatality
03-13-10	1947	50K	Wind/ Rain	50 kts.

03-14-10	1300	40K	Flood	n/a
03-29-10	2310	24.8M	Flood	n/a
04-01-10	0000	n/a	Flood	n/a
07-06-10	1330	n/a	Excessive Heat	n/a

APPENDIX B
HOPKINTON DAM LISTINGS

HIGH HAZARD DAMS

DAM NAME	STATE ID	RIVER	OWNER TYPE
Locustville Pond	*262*	*Brushy Brook*	*Private*
Wyoming Pond Upper	*216*	*Wood River*	*State*
Yawgoo Pond	*226*	*Wincheck Brook*	Private

SIGNIFICANT HAZARD DAMS

DAM NAME	STATE ID	RIVER	OWNER TYPE
Alton Pond	247	Wood River	State
Ashville Pond	*227*	*Blue Pond Brook*	*Local Govt.*
Barberville Pond	*215*	*Wood River*	*Private*
Blue Pond	*229*	*Blue Pond Brook*	*Private*
Harris Pond	*274*	*Tomaquag Brook*	*Private*
Hoxie Farm Pond	*440*	*Canonchet Brook*	*Private*
Langworthy Pond	*285*	*Brushy Brook*	*Private*
Wincheck Pond	*225*	*Moscow Brook*	*Private*

LOW HAZARD DAMS

DAM NAME	STATE ID	RIVER	OWNER TYPE
Bradford Pond	*257*	*Pawcatuck River*	*Private*
Labrecque Farm Pond	*508*	*Glade Brook*	*Private*
Spring St. Pond	*721*	*Moscow Brook*	*Private*
Hope Valley Mill Pond	*245*	*Wood River*	*State*
Long Pond	*287*	*Blue Pond Brook*	*State*
Smith's Ice Pond	*272*	*Parmenter Brook*	*Private*
Veiled Outlet	*724*	*Tomaquag Brook*	*Private*
Maple Lawn Farm Pond	*472*	*Ashaway River*	*Private*
Centerville Pond	*223*	*Moscow Brook*	*Private*
Arcadia Mill Lower	*402*	*Roaring Brook*	*Private*
Lower Mill Pond	*228*	*Blue Pond Brook*	*Private*
Skunk Hill Marsh #1	*598*	*Dawley Brook*	*State*
Wyoming Pond Lower	*217*	*Wood River*	*Local Govt.*
Woodville Pond	*246*	*Wood River*	*Private*
Bethel Pond	*264*	*Ashaway River*	*Private*
Moscow Pond	*222*	*Moscow Brook*	*State*
Potter Hill	*254*	*Pawcatuck River*	*Private*
Rockville Pond	*224*	*Wincheck Pond*	*Private*
Linewalk Pond	*275*	*Canonchet Brook*	*Private*
Sillman Wildlife Marsh	*530*	*Blue Pond Brook*	*Private*
Lewis, Donald Wildlife Marsh	*533*	*Tomaquag Brook*	*Private*

Pinedale Mill Pond	*286*	*Moscow Brook*	*Private*
Knapp Pond	*276*	*Knapp Brook*	*Private*
Ashaway Line Pond	*266*	*Ashaway River*	*Private*
Ashaway Sportsman's Club Marsh	*560*	*Glade Brook*	*Private*
James Farm Pond	*494*	*Tomaquag Brook*	*Private*
Grassy Pond	*289*	*Brushy Brook*	*Private*
Cottrrell Farm Pond	*430*	*Ashaway River*	*Private*
Ashaway Mill Pond	*265*	*Ashaway River*	*Private*
Union Pond	*288*	*Blue Pond Brook*	*Private*

APPENDIX C

MEETING HISTORY AND MINUTES

October 31, 2003

Initial startup meeting / workshop

Hopkinton Town Hall - 1400 hrs.

In Attendance:

Joseph Almeida – State Hazard Mitigation officer, RIEMA
Michael Octeau – Emergency Management Director – Hopkinton
Fred Stanley – Fire Chief – Hope Valley – Wyoming Fire District
Michael Williams – Chief – Ashaway Fire Department
Jason Pezzullo – Town Planner – Hopkinton
Eric Strahl – Town Manager – Hopkinton
Charles Niles – Public Works Director – Hopkinton
Pam Pogue – Floodplain Coordinator - RIEMA
Charles Mauti – Building Official – Hopkinton
Michael Gilman – Police Lieutenant – Hopkinton
Linda DiOrio – Town Council President - Hopkinton

Topics discussed were the mission statement, fact sheets, the community Rating System, debris management, dam safety, impact of potential business interruption, Multi-hazard mitigation measures, what is a risk in the community, critical facilities, NFIP data, capital improvement projects, historic preservation sites, evacuation routes, and the implementation of hazard measures in local plans.

Meeting adjourned at 1600 hrs.

November 16, 2003

Hopkinton Town Hall – 1830- 2000 hrs.

Report by EMA Director Octeau to Town Council. Octeau reported that the Hopkinton Hazard Mitigation Committee would be the following:

Chairman: Michael Octeau
Fred Stanley
Michael Williams
Jason Pezzullo
Eric Strahl
Michael Gilman

Linda DiOrio

In addition it was mentioned that members from the business community and the public were needed to fill additional positions but that no one had come forward. The council followed the Director's recommendation and appointed the listed committee members.

Meeting Date – 12 / 22 / 03

The meeting of the Hopkinton Hazard Mitigation Committee was called to order at 1017 hrs at the Hopkinton Town Council Chambers. Members present were the following:

Michael Octeau	Fred Stanley
Jason Pezzullo	Michael Williams
Eric Strahl	Charles Niles
Sherri Miller for Charles Mauti	

The first order of business was to post a schedule for the next four meetings. All agreed that an aggressive schedule was needed due to the time frame set by the State, so meetings were scheduled for January 12, 26, February 9 and 23. Sherri Miller also requested that 11 am be the time of future meetings as the building official, Mr. Mauti was busy with inspections until then. All were in favor and the schedule was set.

The next order of business was a rundown on the strategy that the committee would take during the upcoming months. All committee members were issued a copy of Step one of the State and Local Mitigation Planning How – To guide issued by FEMA. The Book uses a four Step Process to collect information and develop a plan. Chairman Octeau noted that we would collect most of the data needed for the plan and when an intern was hired, most of the legwork would already be complete. Mr. Pezzulo reported that he may have someone willing to take the intern position but we would need the grant money before we could actually hire him or her. Efforts would be made to get a status on the grant.

All members then participated in listing actual hazards that may occur in our town. The worksheet from step one was utilized and members had input on the specific potential hazards. Actual information was obtained prior to the meeting through Internet research and through personal experiences. Hazards that the committee was unsure of would be researched for upcoming meetings.
The meeting was adjourned at 1140 hrs.

Meeting Date – 1 / 26 / 04

The meeting of the Hopkinton Hazard Mitigation Committee was called to order at 1126 hrs at the Hopkinton Town Council Chambers. Members present were the following:

Michael Octeau	Charles Mauti
Jason Pezzullo	Michael Gilman
Eric Strahl	

The first order of business was reading of the previous meeting minutes- dispensed. The next order was an update on the grant from RIEMA. Chairman Octeau reported that he had spoken to Joe Almeida, the State Hazard Mitigation Officer and he stated that he would be processing our paperwork soon. Mr. Almeida stated that the Town would receive the memorandum of understanding sometime in February and that a check should arrive sometime in March.

A request was made to gather information regarding training at EMI. A discussion was held regarding the benefits of these classes at little to no cost to the town. Octeau stated that he would gather information on these programs.

An extensive discussion was held on potential hazards facing the town. Mr. Mauti was asked to submit any flood data that was available and was asked for his input on other specific hazards. Chairman Octeau also reported for Chief Williams as to information he received regarding wildfires. Williams reported that although the State wildfire management plan was not complete Hopkinton was not really at great risk. Most of the attendees agreed that while wildfire was not a tremendous threat due to building code provisions, major fire events have and could still happen. General consensus was that outdoor fire ordinances could be beefed up and an aggressive public education program could curb this hazard.

Octeau stated that he had been in contact with the state Geologist at URI and was told that no significant earthquake effects have been experienced in our area. He handed out a report on New England Geology that explained the position in greater detail. Octeau also reported that he had been in contact with David Vallee from the National Weather Service regarding hurricane and Severe Storm Data. Mr. Vallee has assisted many other committees in the past and is regarded as an expert in the hurricane community. He was sending the storm data via E-mail this week and would snail – mail the hurricane data, as the file was very large.

Chairman Octeau also requested that al member seek business owners and members of the public to sit on our committee.

The meeting was adjourned at 1219 hrs.

Meeting Date – 02 / 09 / 04

The meeting of the Hopkinton Hazard Mitigation Committee was called to order at 1105 hrs at the Hopkinton Police Headquarters. Members present were the following:

Michael Octeau	Fred Stanley
Jason Pezzullo	Michael Gilman

A reading of the previous meetings minutes were read and accepted without correction.

A discussion was held regarding the work that has been done to this date and all felt that the committee was on track.

A discussion was held regarding the status of the grant funding for the intern. Chairman Octeau stated that he had contacted the RIEMA and that they promised that the check would be in relatively soon.

Mr. Pezzullo discussed payment options for the potential interns and recommended a tiered approach to intern pays. He stated that we should make payments based on the completion of an initial draft followed by a second at the next draft and a final payment on plan completion. All were in favor.

Mr. Pezzullo stated that he had asked a number of qualified intern candidates and liked one person in particular for the job – Michael Abbey. All agreed that Mr. Abbey should attend the next meeting.

The next meeting was scheduled for February 23, at 1100 hrs. at the Hopkinton Police Headquarters.

The meeting was adjourned at 1101 am.

Meeting Date – 02 / 23 / 04

The meeting of the Hopkinton Hazard Mitigation Committee was called to order at 1100 hrs at the Hopkinton Police Headquarters. Members present were the following:

Michael Octeau	Fred Stanley
Jason Pezzullo	Michael Gilman
Eric Strahl	Charles Niles
Charles Mauti	Michael Abbey

The minutes of the previous meeting were read and accepted without correction.

The committee was introduced to Michael Abbey – Intern by Mr. Pezzulo. Mr. Abbey listed his qualifications and his experience in emergency planning. The committee accepted Mr. Abbey as intern.

Chairman Octeau requested that all members pick 10 target hazard facilities. A brief discussion was held regarding target hazards and it was determined that a list would be compiled using the submitted information.

Mr. Abbey was brought up to speed regarding past committee actions to aid him in plan development.

The meeting was adjourned at 1200 hrs.

HOPKINTON HAZARD MITIGATION PLAN
CHAPTER 12 – REFERENCES

1 *2010 Local Climatological Data Annual Summary with Comparative Data*, Providence, Rhode Island (PVD), NOAA, National Climatic Data Center – 2003

Community Vulnerability Assessment Tool, NOAA Publication # NOAA/ CSC/ 99044-CD, National Oceanic & Atmospheric Administration. Coastal Services Center, Charleston, SC, 2000

National Flood Insurance Program - Program Description - August 1, 2002 - FEMA

Rhode Island Agricultural Digest 2003 - Rhode Island Department of Environmental Management - Reitsma, Jan H. / Ayars, Kenneth D. / Volpe, Stephen M. - www.state.ri.us/dem

Rhode Island Drought Management Plan - State Guide Plan Element 724 Rhode Island Graphical Information System (RIGIS) – URL www.planning.state.ri.us/GIS/GISHOME.HTM

Southern New England Tropical Storms and Hurricanes – A Ninety Seven Year Summary 1900-1996 Including Several Early American Hurricanes –. Vallee, David R / Dion, Michael R. (National Weather Service Field Office – Taunton MA.) – 1996

State and Local Mitigation Planning – How- To Guide – FEMA – August 2001

State of Rhode Island – 2002 Annual Report to the Governor on the Activities of the Dam Safety Program – Department of Environmental Management, Office of Compliance and Inspection
The Natural Hazards Center at www.colorado.edu/hazards

The Forests of Rhode Island – Butler, Brett / Wharton, Eric – USDA, USFS, RIDEM-Division of Forest Environment – September 2002

Town of Hopkinton Real Estate Data – Certified Revaluation Company – 2003

Weather for Dummies – Cox, John - Hungry Minds Inc. – 2000

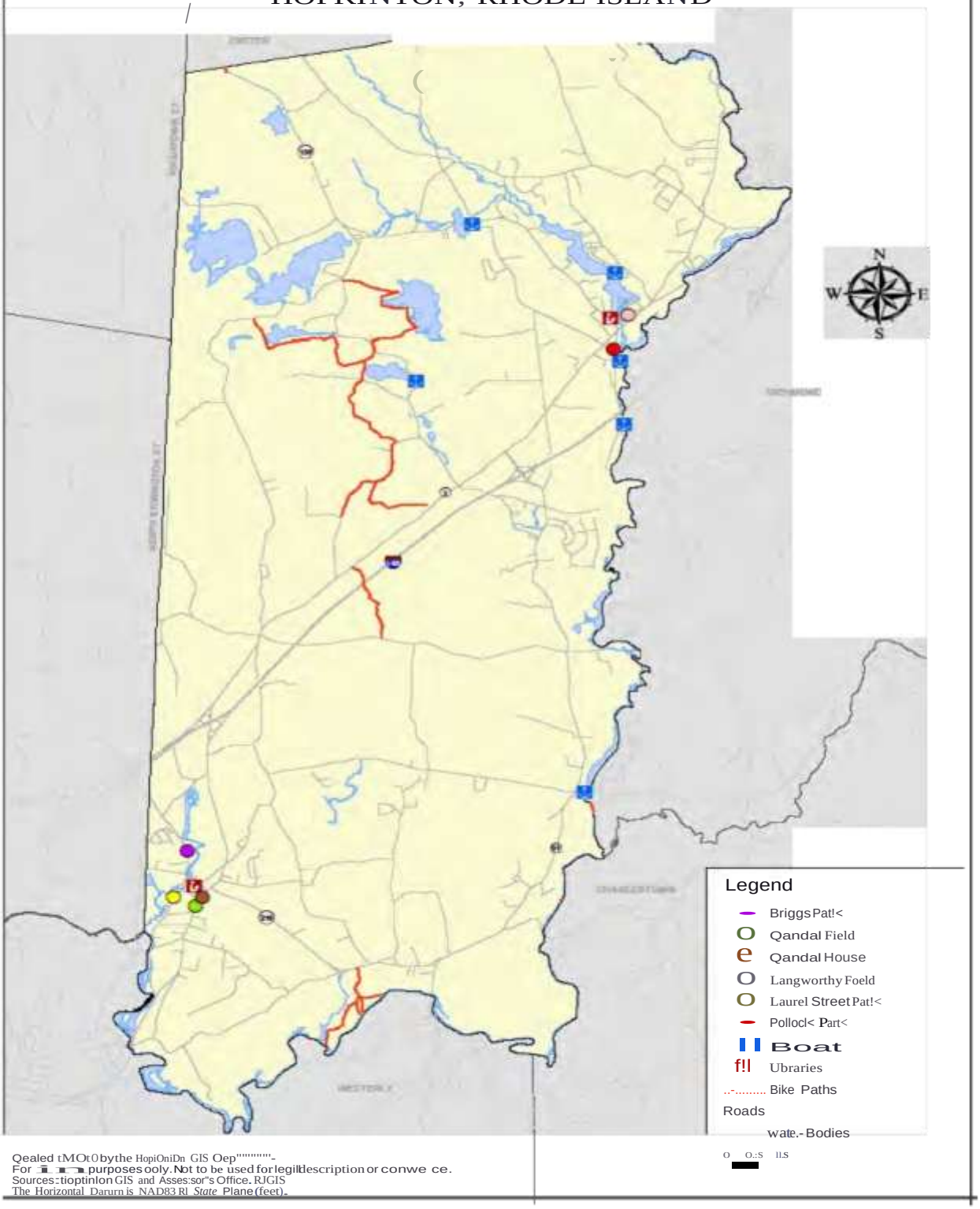
Why Does the Earth Quake in New England? -The Science of Unexpected Earthquakes. - Kafka, Alan – January 2004

HOPKINTON HAZARD MITIGATION PLAN
CHAPTER 13 – MAPS

Map 1- Recreation Services
Map 2 – Open Space / Conservation Land
Map 3 –Groundwater and Wellhead Protection Areas
Map 4 – Prime Agricultural Soils
Map 5- Wetland Resources
Map 6 – Historic and Cultural Resources
Map7 – Public Services and Facilities
Map 8 – Circulation System
Map 9 – Intentionally Left Blank
Map 10 – Residential Density
Map 11 – Future Land Use
Map 12 – Street Map
Map13 – Zoning
Map 14 – Active and Inactive Dams Map
15 – Forest and Wetland Resources Map
16 – Groundwater Resources
Map 17 – Soil Hydrology
Map 18 – Town Overview
Map 19 – 2010 Individual Assistance Applications
Map 20 – Flood Zones

MAP 1 RECREATION SERVICES

HOPKINTON, RHODE ISLAND



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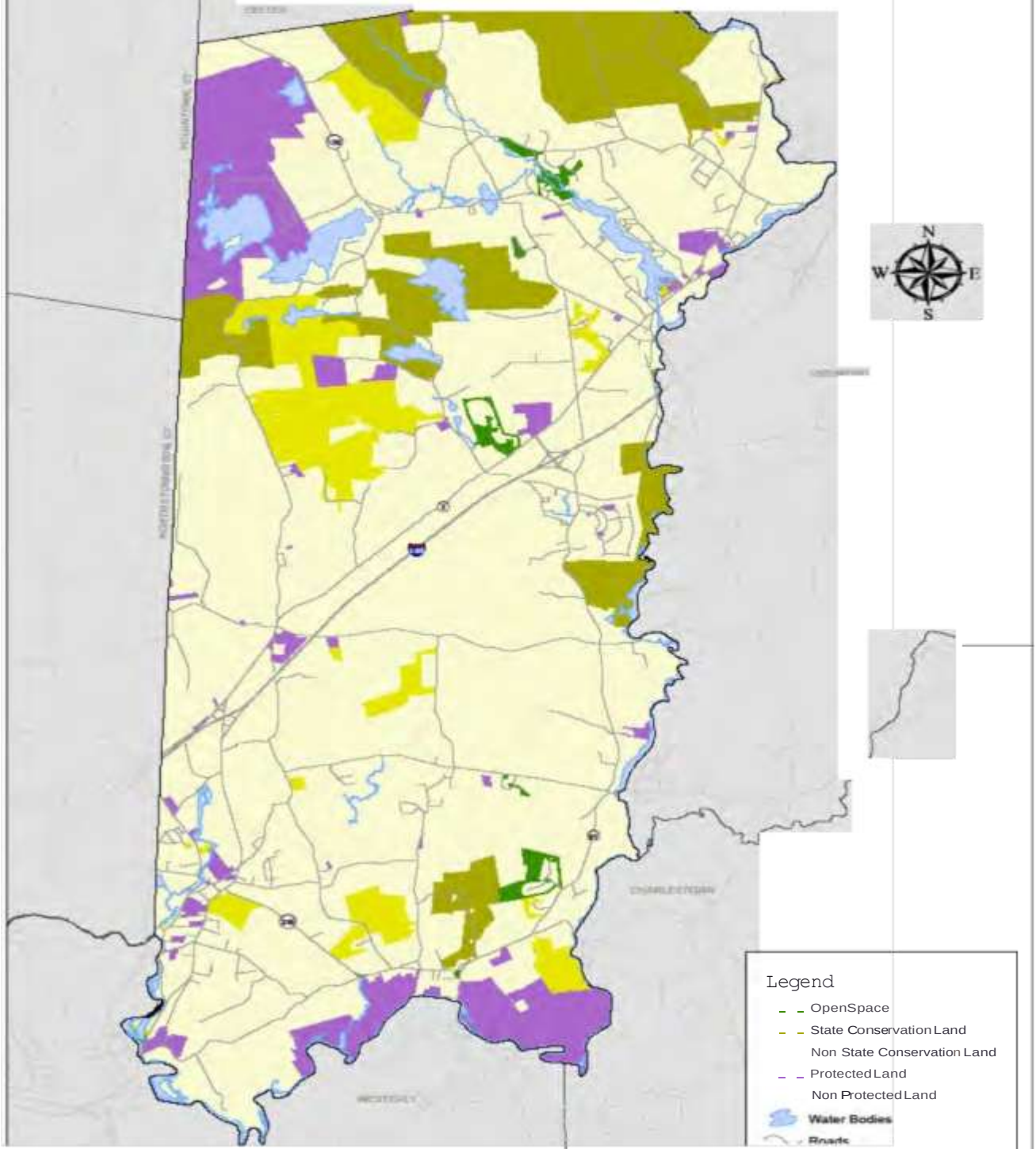
MAP 2 OPEN SPACE / CONSERVATION LAND
HOPKINTON, RHODE ISLAND



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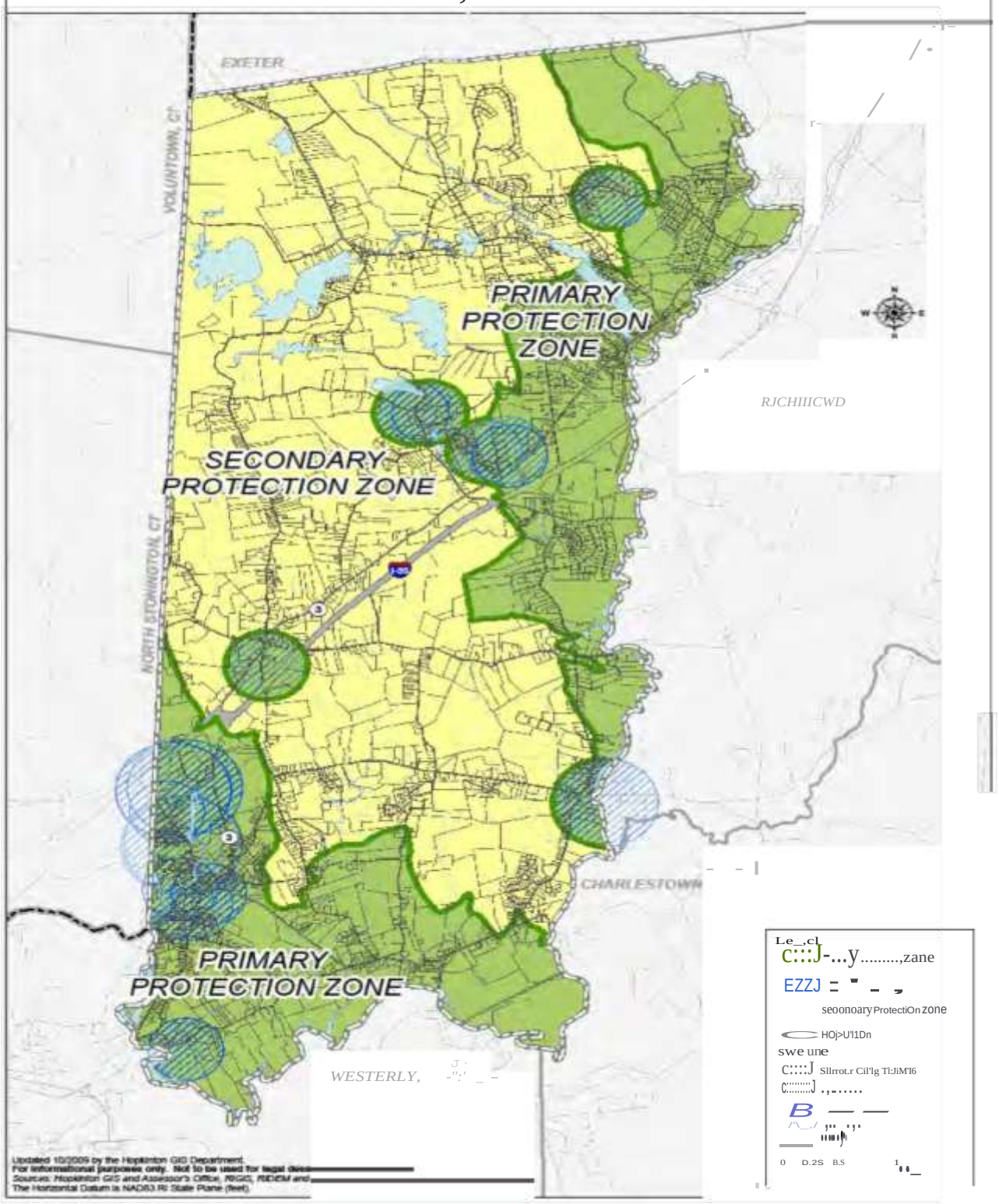
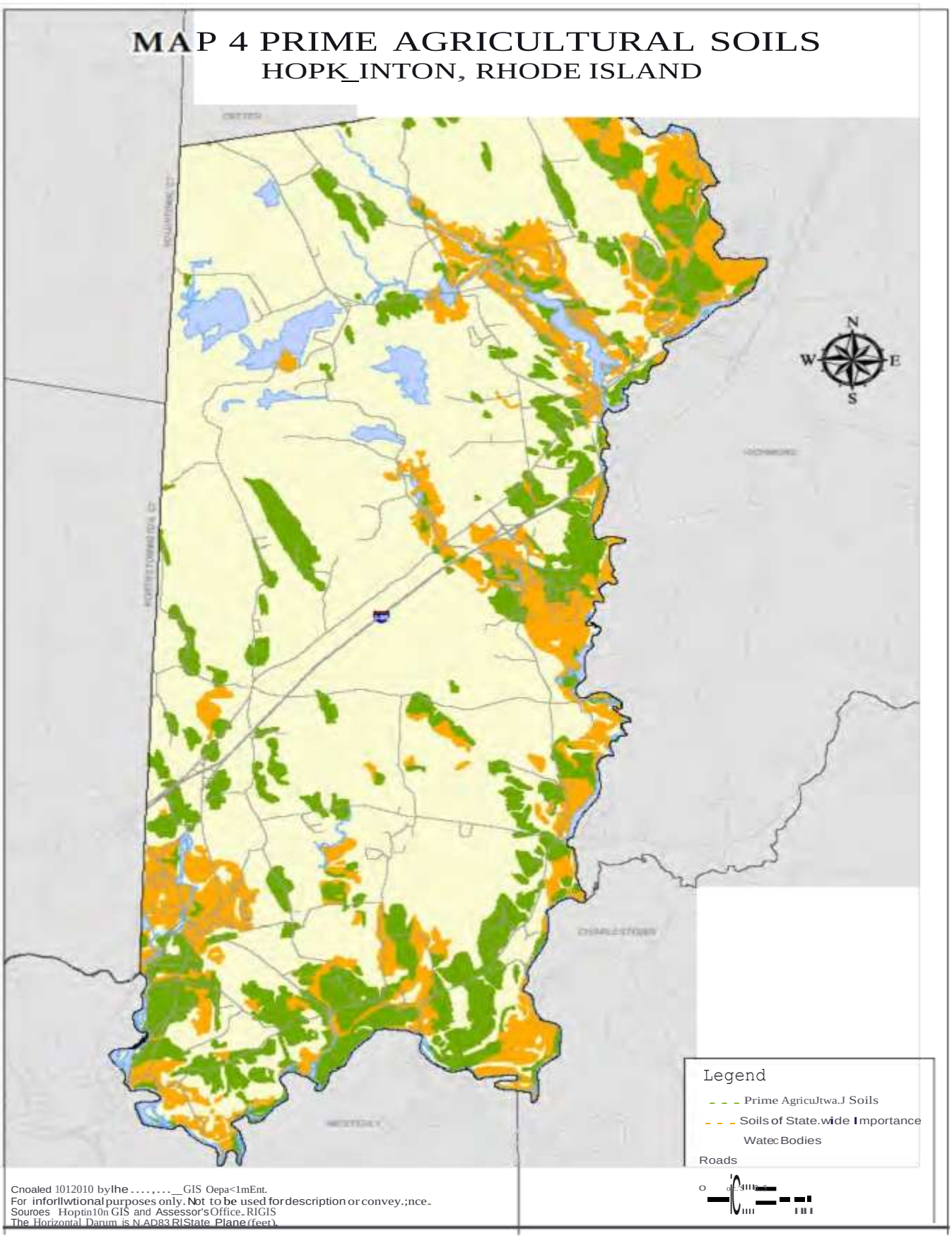
MAP 3 GROUNDWATER AND WELLHEAD PROTECTION AREAS
HOPKINTON, RHODE ISLAND



MAP 4 PRIME AGRICULTURAL SOILS
HOPK_INTON, RHODE ISLAND



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MAP 5 WETLAND RESOURCES

HOPKINTON, R ISLAND

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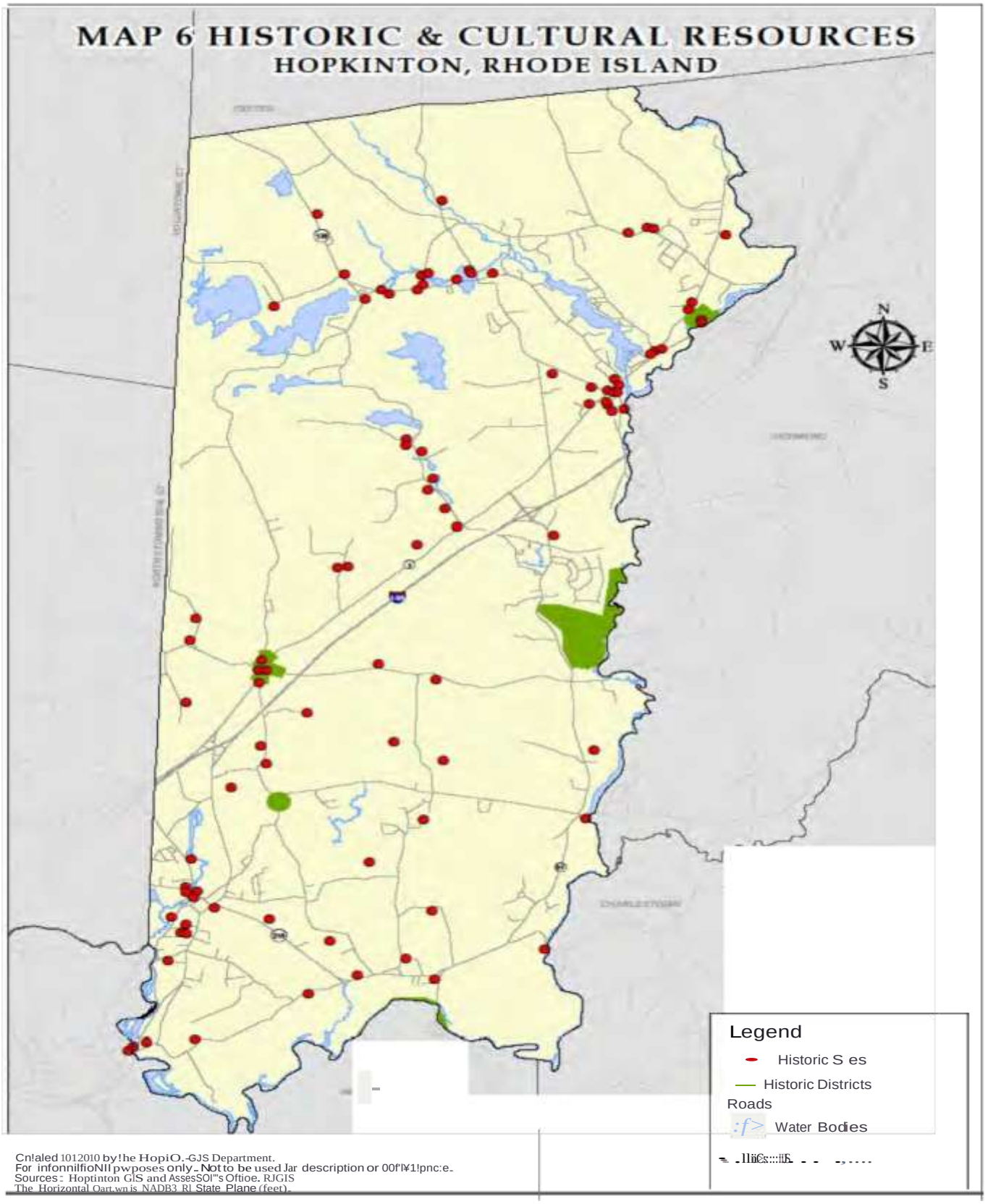

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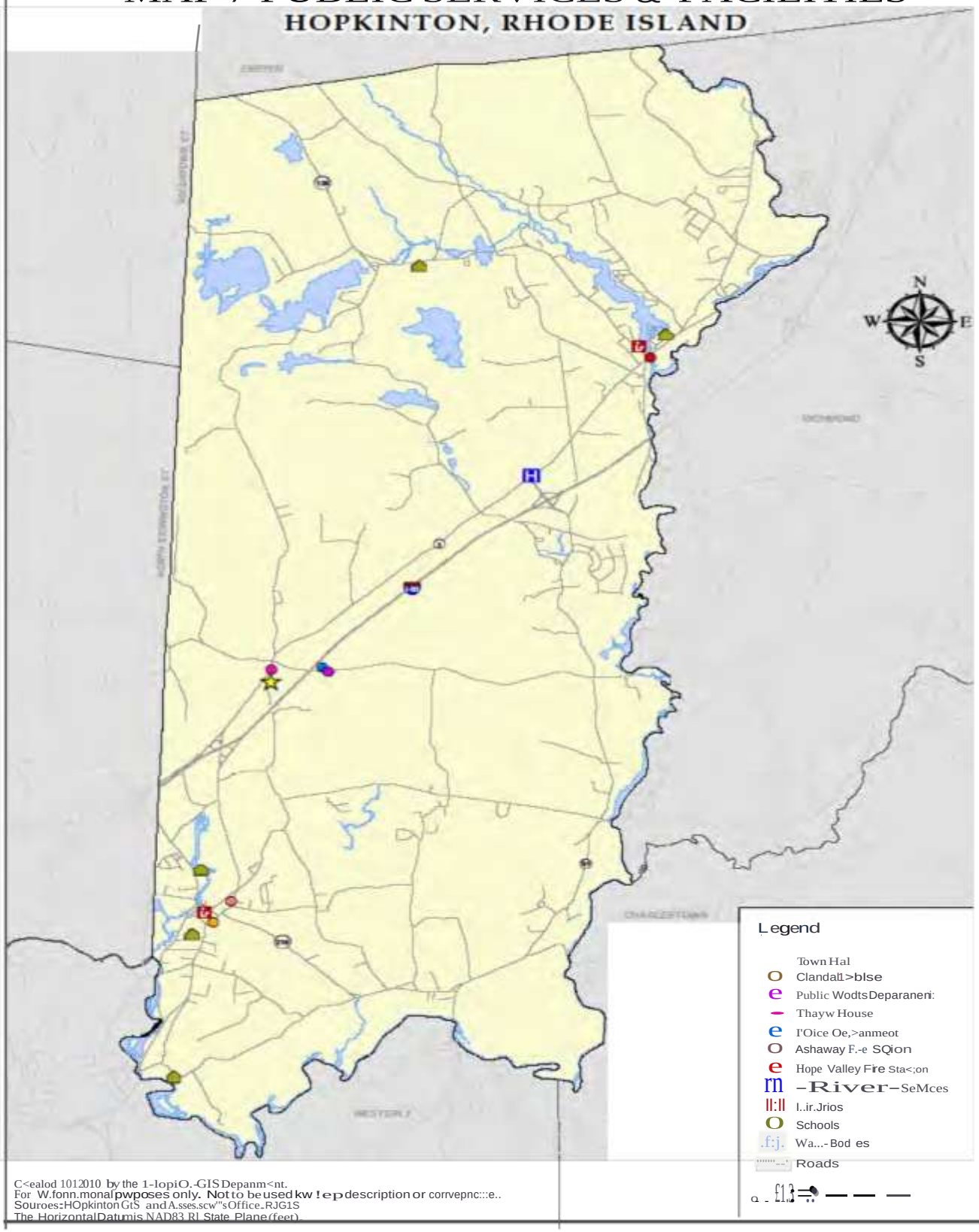
MAP 7 PUBLIC SERVICES & FACILITIES

HOPKINTON, RHODE ISLAND



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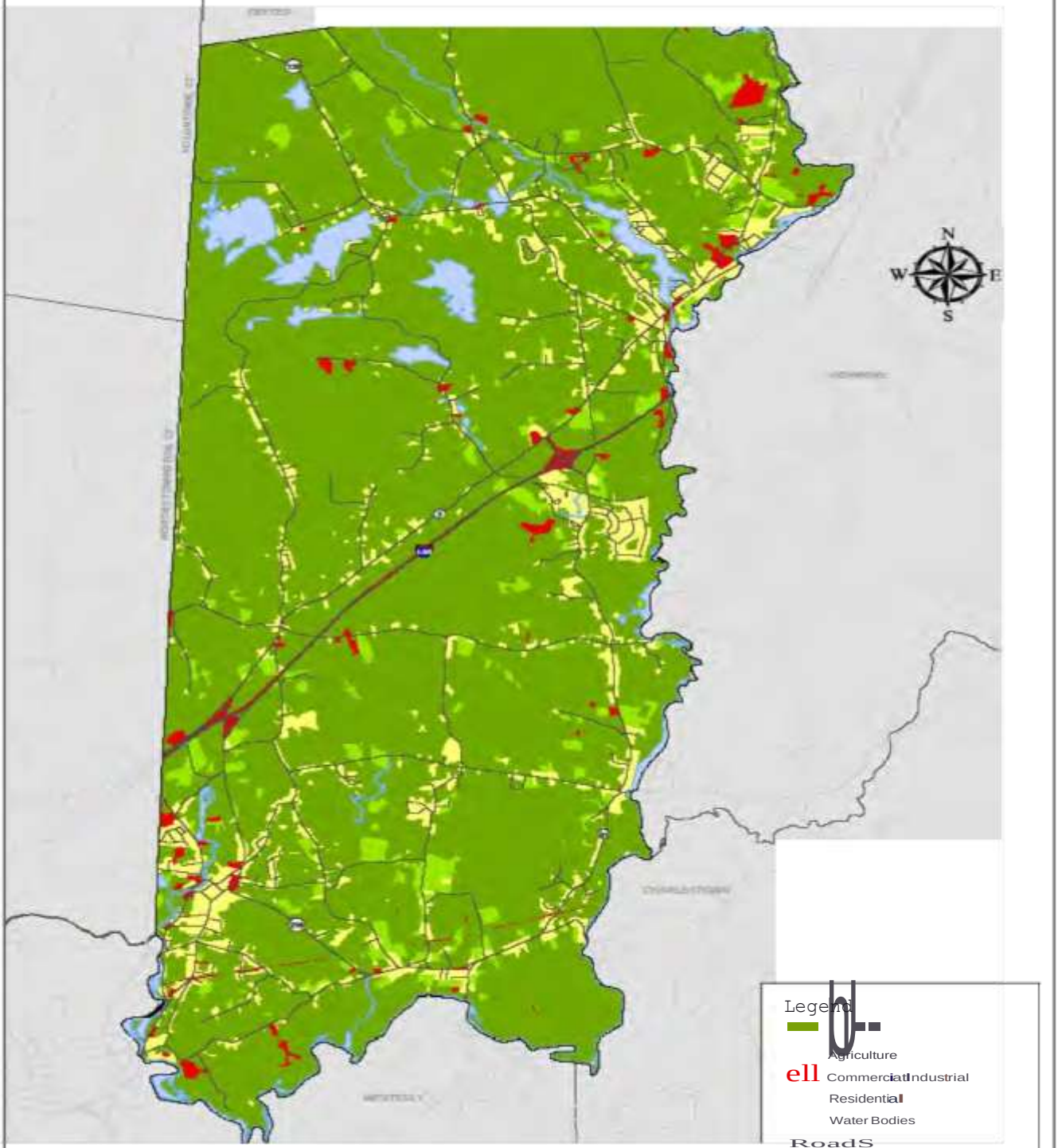
MAP 8 CIRCULATION SYSTEM
HOPKINTON, RHODE ISLAND

MAP 9 EXISTING LAND USE
HOPKINTON; RHODE ISLAND



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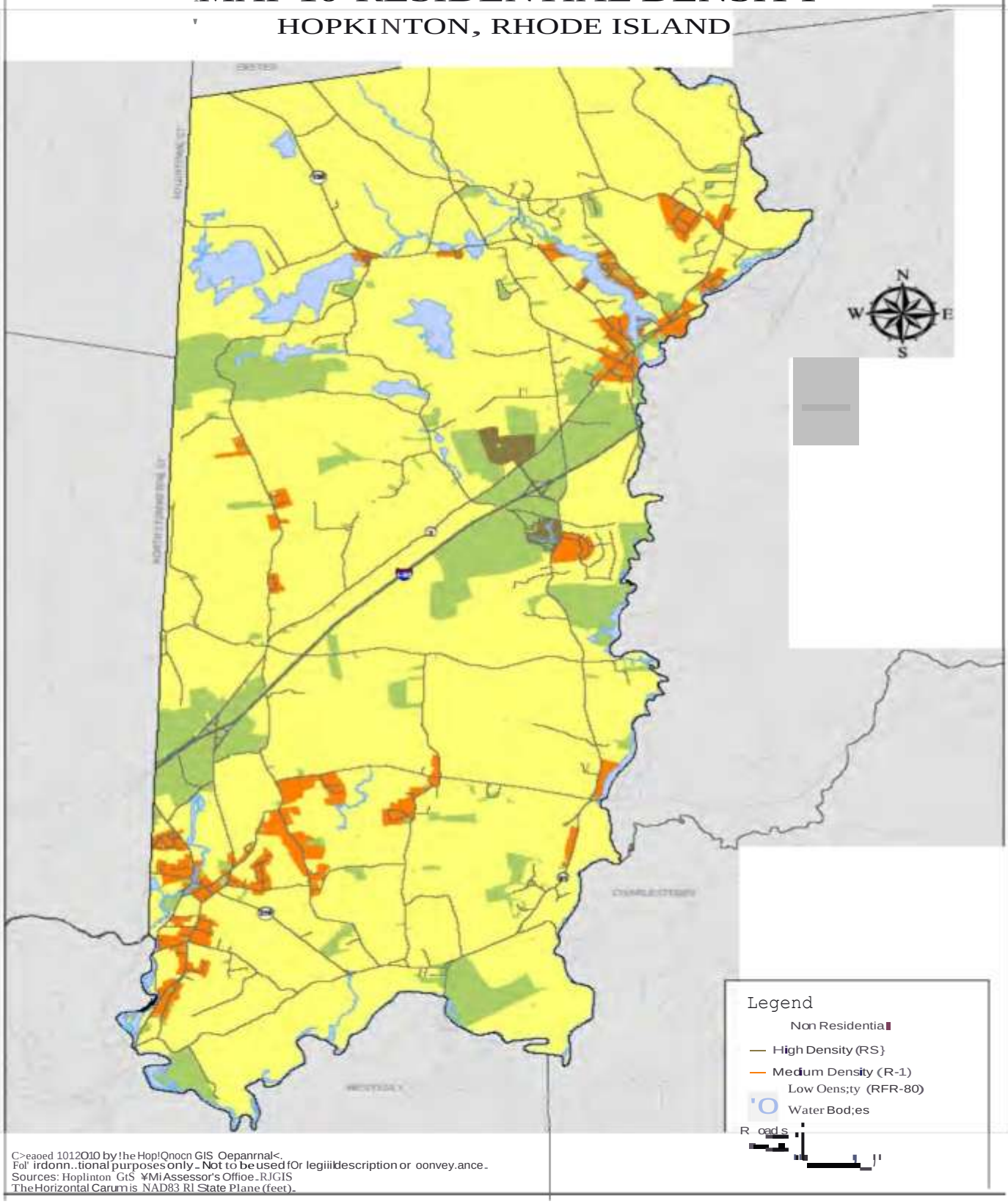
MAP 10 RESIDENTIAL DENSITY

HOPKINTON, RHODE ISLAND



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MAP 11 FUTURE LAND USE

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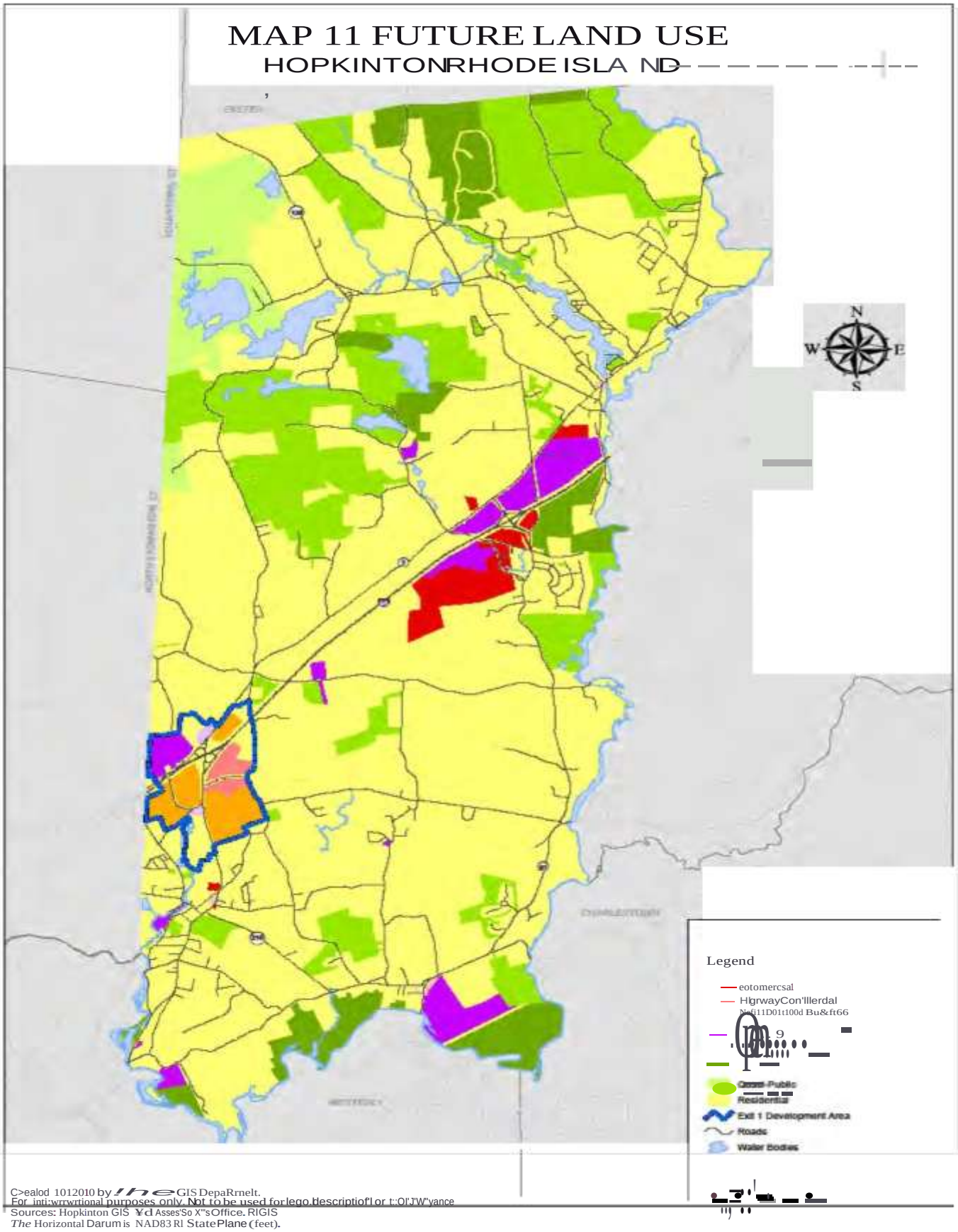

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STREET MAP
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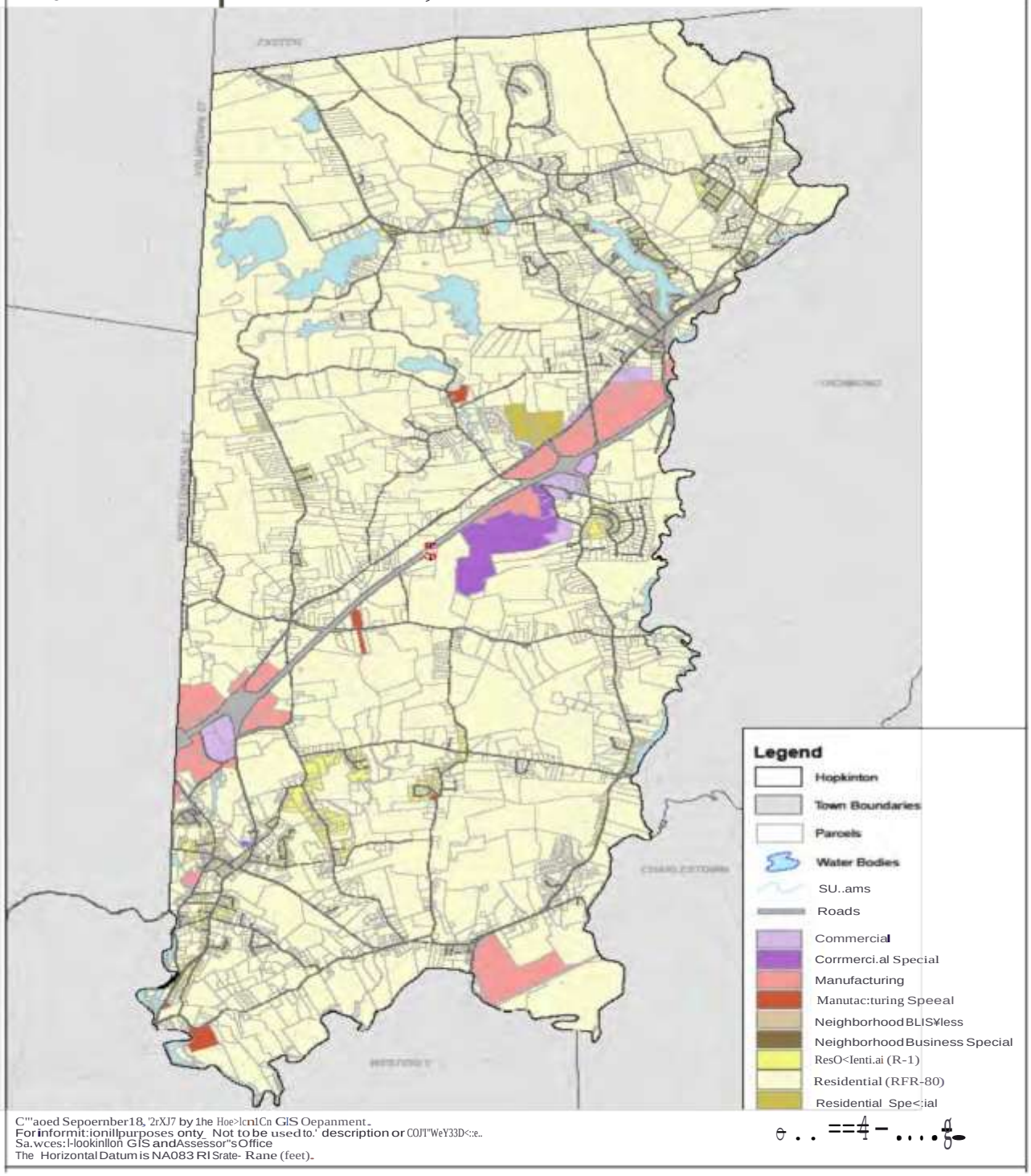
ZONING MAP
HOPKINTON, RHODE ISLAND



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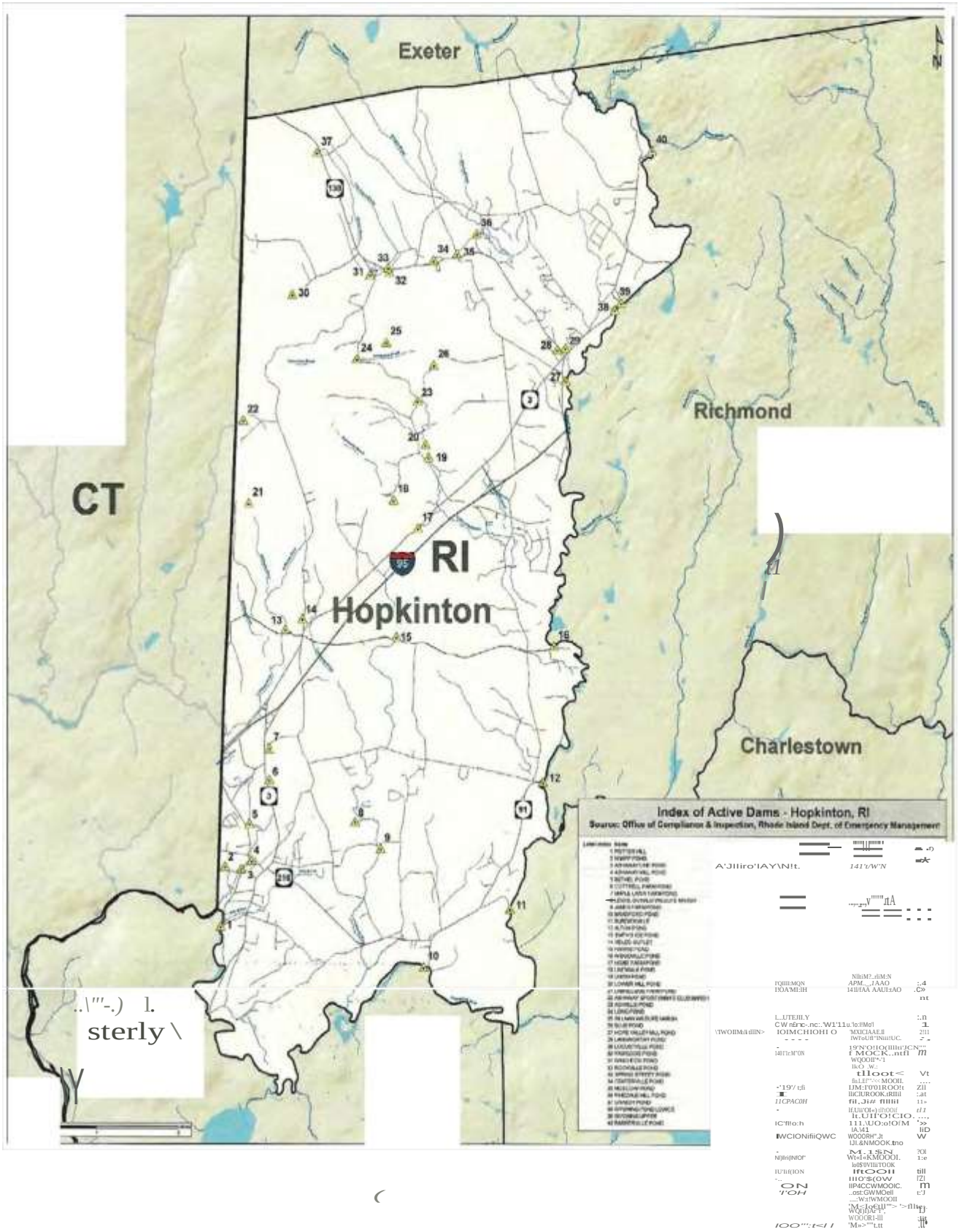
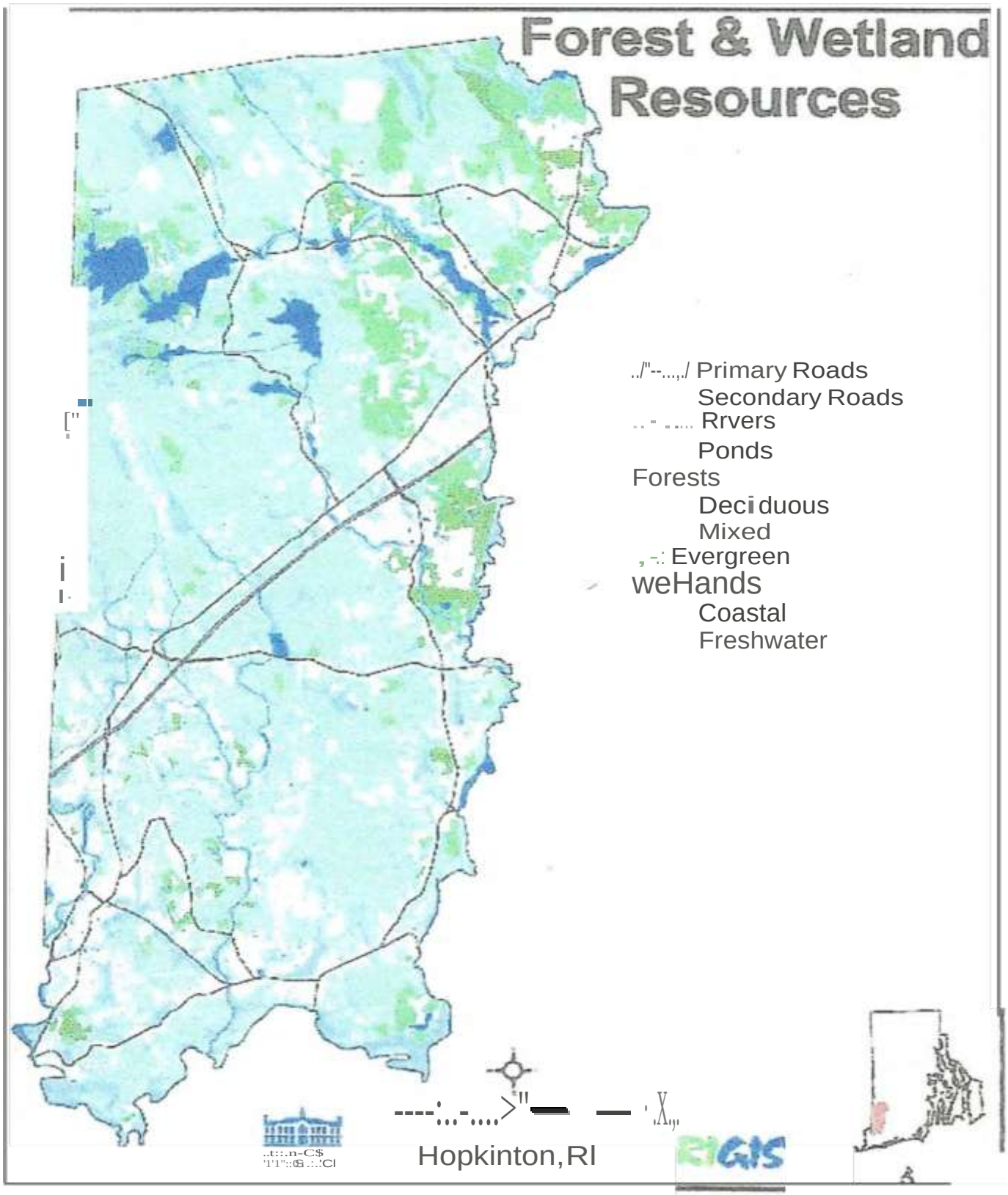
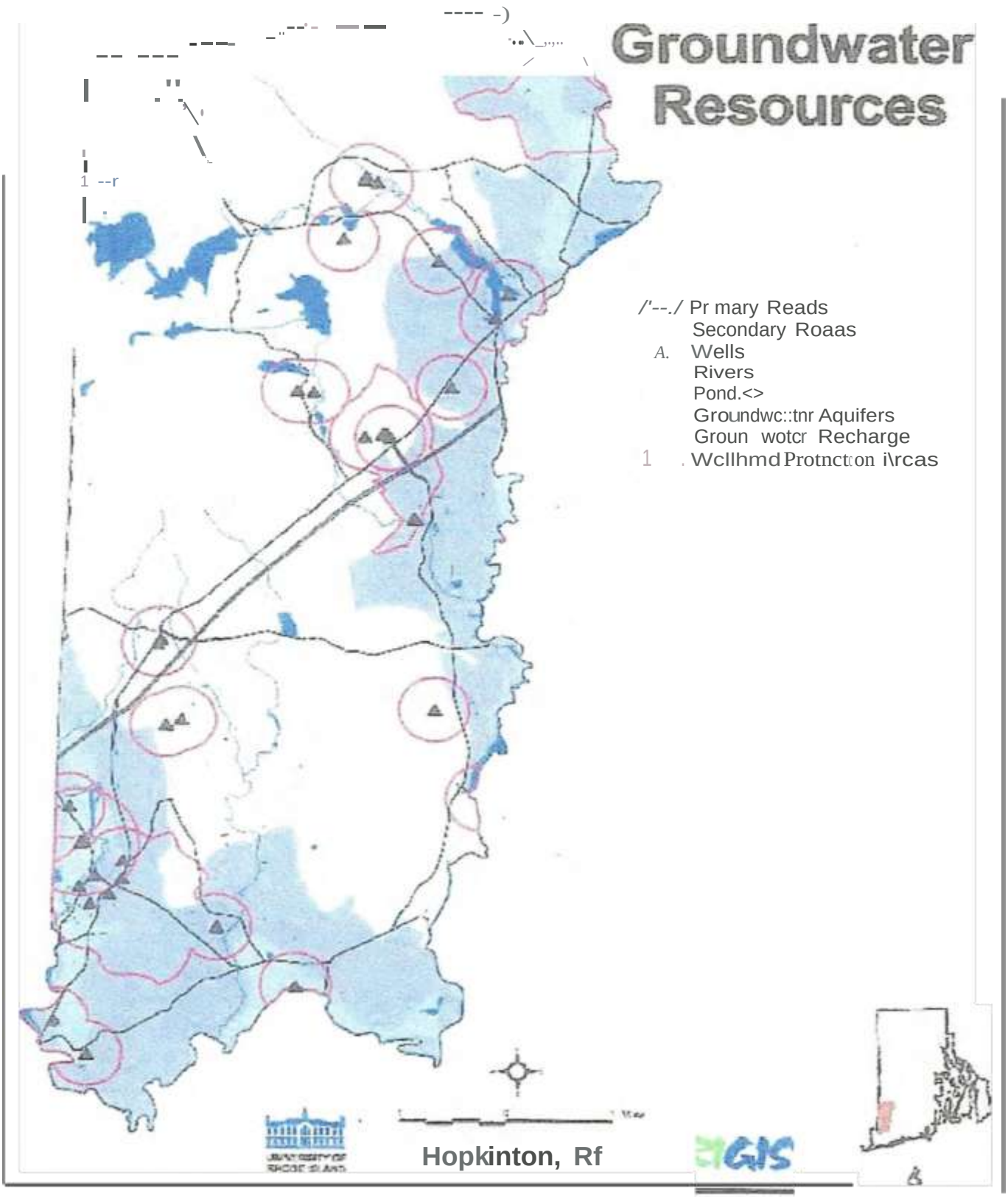


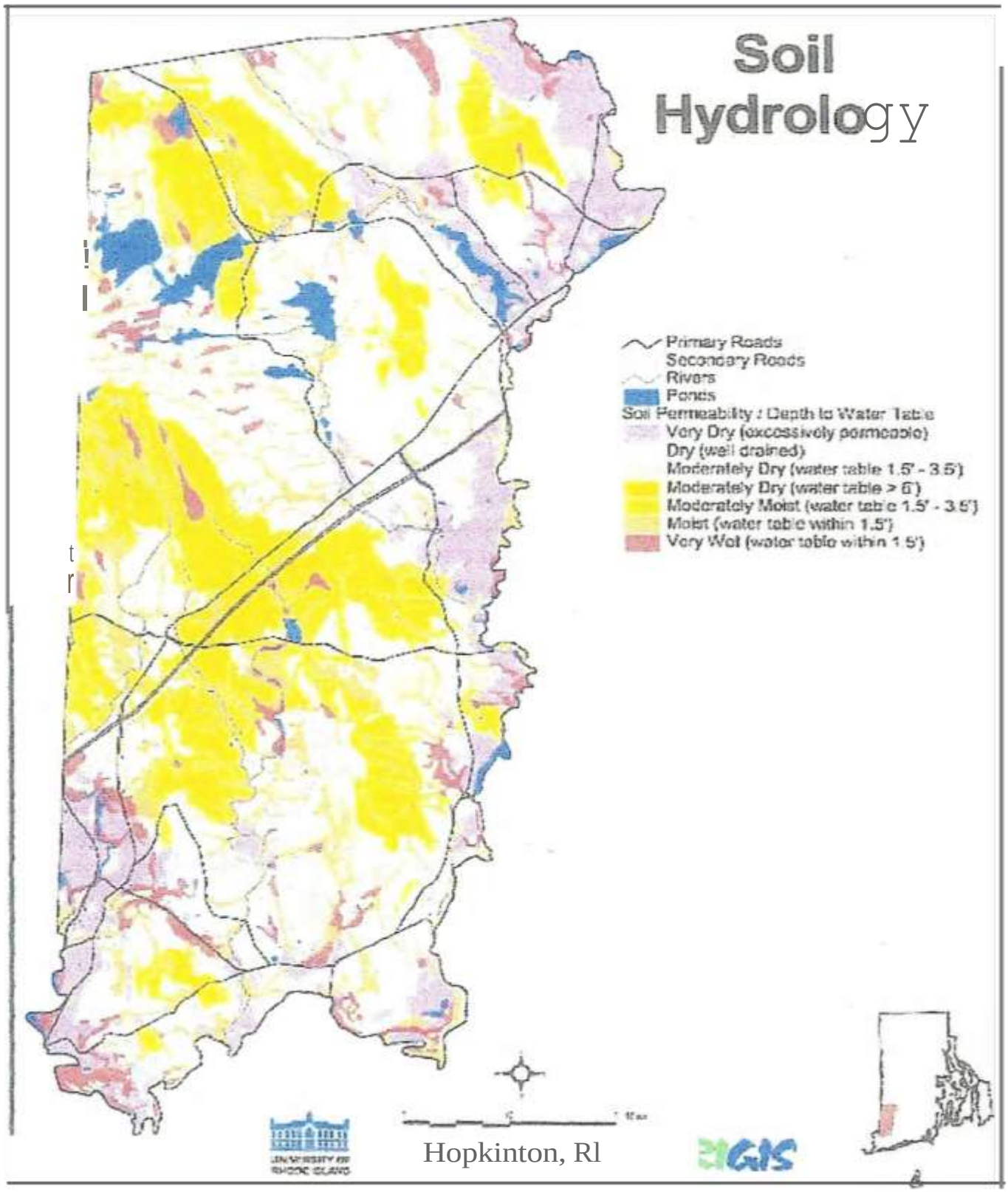
MAP 14- ACTIVE AND INACTIVE DAMS



MAP 15- FOREST AND WETLAND RESORCES

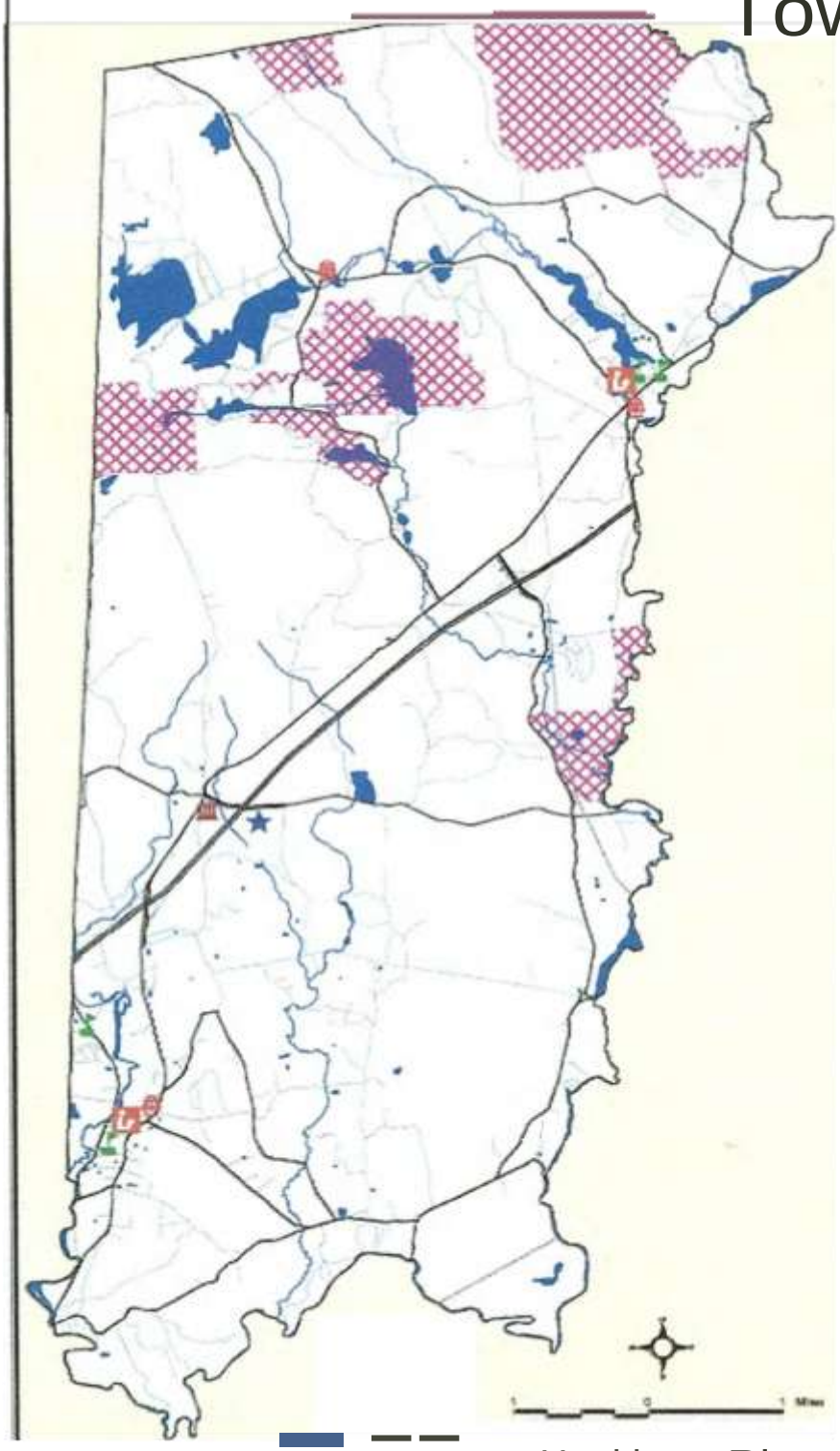


MAP 16- GROUNDWATER RESOURCES



MAP 17- SOIL HYDROLOGY

Town Overview



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@ Are Department
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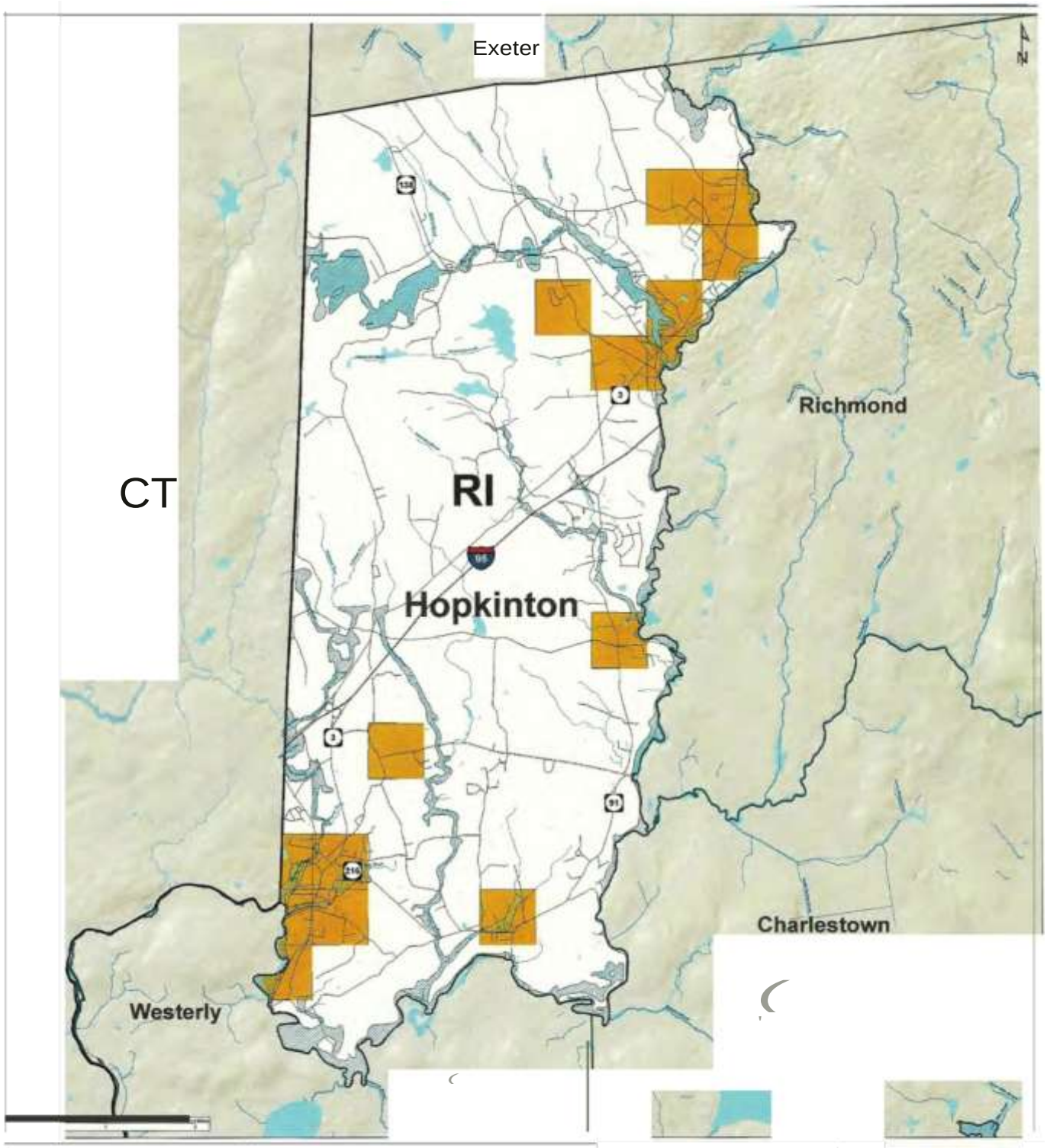
a Town Han
,: SchooJ
Dll Train Station
Ubrary
— Railroads
/''v''' Primary Roads
Secondary Roads
/''v''' Rivers
Protected Areas
– Ponds

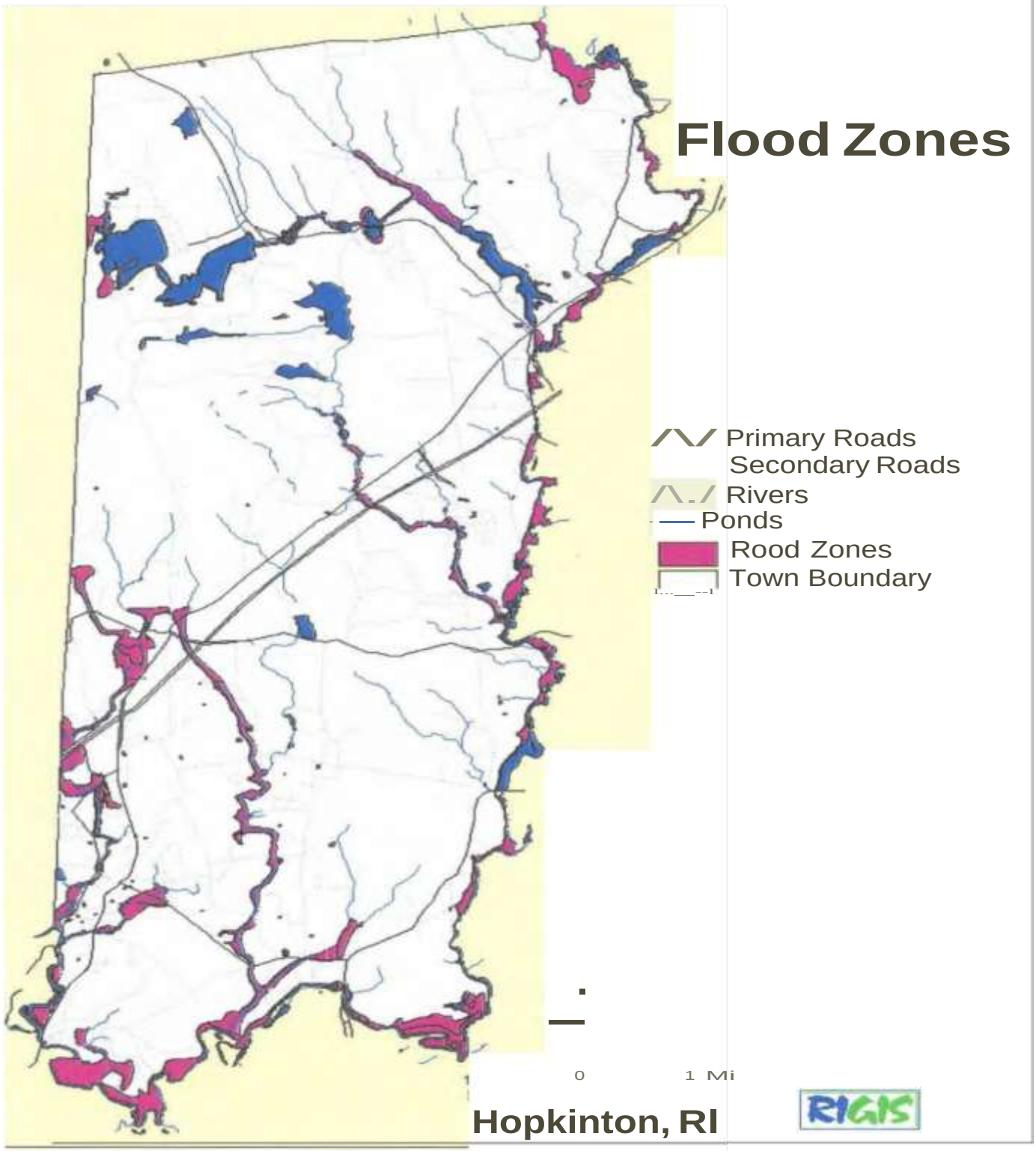
Hopkinton,RI

RIGIS

MAP 18- TOWN OVERVIEW



MAP 19-2010 INDIVIDUAL ASSISTANCE APPICATIONS



MAP 20 - FLOOD 20NES

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