Cumberland County, Maine
Hazard Mitigation Plan


Portland Head Light, Cape Elizabeth


City of Portland


New Meadows River, Brunswick


Panther Run, Raymond

December 23, 2004
Updated December, 2010

Prepared by:
Cumberland County Emergency Management Agency
&
Cumberland County Soil and Water Conservation District

Cumberland County Soil & Water Conservation District

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SECTION I – OVERVIEW OF JURISDICTION

This plan was originally produced and subsequently updated by the Cumberland County Soil and Water Conservation District (CCSWCD), under contract to the Cumberland County Emergency Management Agency (CCEMA). It is a multi-jurisdictional plan covering the entire County. The objectives of producing a multi-jurisdictional plan are:

- Increased efficiency in the development of the plan,
- Identification of county-wide mitigation measures, and
- Identification of opportunities for inter-municipal cooperation and coordination.

The plan includes the following sections:

1) Overview of Jurisdiction
2) Prerequisites
3) Planning Process
4) Risk Assessment
5) Mitigation Strategies
6) Plan Maintenance Procedures

Cumberland County's geology and climate exert great influence on the occurrence and severity of the County's natural hazards. Although the County is usually able to handle these hazards, overwhelming events have required federal assistance. The County's original hazard mitigation plan was published in 2005, and herein has been updated to reflect any changes to the County's hazard identification and mitigation measures recognized over the last five years. This first update of the plan has been done in accordance with the most recent FEMA guidelines thereby reflecting the most recent research, analysis and mitigation planning.

The number one hazard for Cumberland County is flooding. A brief climate description at the beginning of the Risk Assessment section of the plan gives an overview of why flooding is a possibility during any season. Therefore, the primary mitigation efforts identified in the plan concentrate on the causes and effects of flooding. As such, the plan dovetails nicely with the on-going efforts of the individual communities within the County as they prioritize the mitigation actions within their comprehensive plans and identify budgets (or shortfalls) to implement their projects. The Risk Assessment section also presents a discussion of Cumberland County's other potential hazards and associated mitigation measures.

Cumberland County was incorporated in 1760 and was named after William, Duke of Cumberland, son of George II. Cumberland County is made up of a mix of municipalities, ranging from Portland, Maine's largest city, to the rural towns in the northern end of the county, and the Islands of Casco Bay. From civil-war era Fort Georges, at the head of the Fore River in Casco Bay to the centuries old inns and mills in the upper county, Cumberland County is rich in history. South Portland's shipyards built hundreds of the famous Liberty Ships of the World War II era.

In the current era, Portland is one of the largest oil and sea ports on the East Coast and commercial cruise ships are an increasingly common sight in the harbor as Portland grows in popularity as a cruise ship port-of-call. From Pine Point at the southern end of the County to Small Point at the north and the islands in between, fishing and lobster boats continue to play a role in the county's economy and cultural heritage. The lakes region of the County is a popular vacation destination and continues to see development as the activity and population of Portland and its surrounding suburbs spread north and west. Though threatened by development, farming and forest-based economies still viably operate throughout the County.

Portland Head Light, Cape Elizabeth

Inland features include Sebago Lake, Maine's second largest lake which serves as the drinking water supply for almost a fifth of the state's population and as the premiere freshwater recreational resource in the state. The Sebago Lake watershed has significant development pressure on its riparian, private forests important for protecting drinking water supply and flood mitigation. Land uses that tend to dramatically alter natural hydro-geological and biological processes have the greatest potential to negatively impact the quality of the watershed. As such, watershed protection and hazard mitigation are integral components of municipal comprehensive plans and zoning ordinances throughout the County.

As of July 2008, the County had a population of 276,047 residents living in 107,989 households. The population density of the County has increased over the last decade to approximately 329 persons per square mile as reported in 2008. The County has an overall area of 1,217.4 square miles with land area totally 836 square miles and water area totally 381.4 square miles. Cumberland County has approximately 1289-miles of shoreline, including the coastlines of the island communities, of which 126-miles is publically owned.

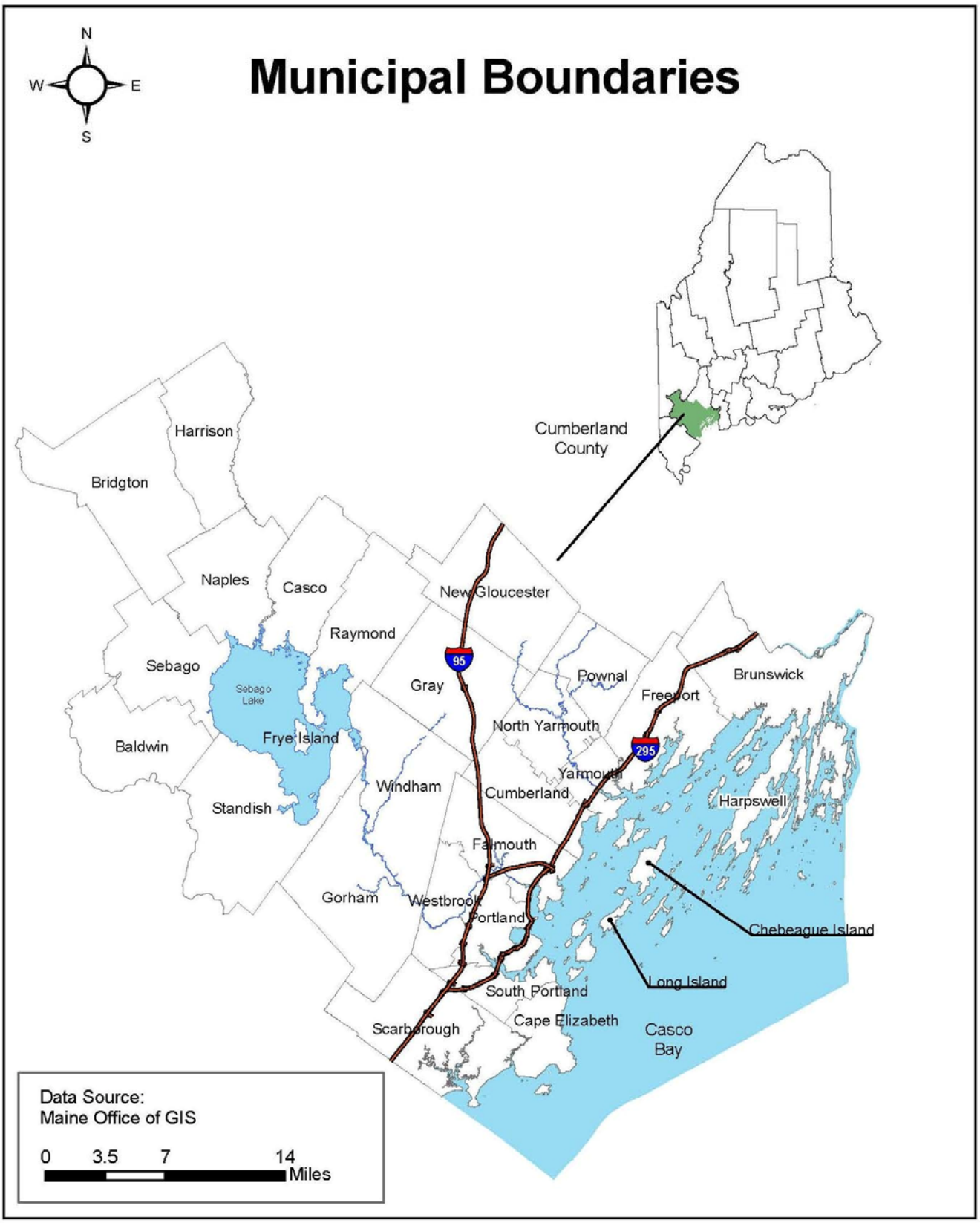
There are 25 incorporated towns and 3 incorporated cities, including Portland, the County seat. Cumberland County is part of the Portland-South Portland-Biddeford Metropolitan Statistical Area. The County Government includes the Sheriff's Department and County Jail, County Clerk's office, County Treasurer's Office, Registrar of Deeds, Probate Judge, Assistant District Attorney, and Emergency Management Agency.

There are significant transportation thoroughfares through the County. These include US Route 95 from north to south and Maine State Route 302 from east to west. Rail transport and Amtrak traverses the county from north to south through Portland and the coastal communities. Portland is also home to the Portland International Jetport. Significant employers in the county include: UNUM, L.L. Bean, National Semiconductor, Fairchild Semiconductor, and IDEXX.

The table below shows the municipal populations based on the 2000 U.S. Census data. The Chebeague Island information has been made available following the Municipality's incorporation in 2007. It is expected that 2010 U.S. Census data will be available for the 2015 plan update. A figure showing the municipality boundaries and a table of County demographics follows.

MUNICIPAL POPULATIONS (from 2000 U.S. Census data)

Town/City	Area (sq. miles)	Year Round Population	Median Age	Density (persons/sq. mile)	Total Homes	Year Rd. Homes	Household Density
Baldwin	36.33	1,290	38.7	36.5	577	493	2.62
Bridgton	67.65	4,883	39.8	85.2	3,063	1,924	2.54
Brunswick	54.22	21,172	35.5	452.6	8,720	8,150	2.60
Cape Elizabeth	58.41	9,068	43.1	615.5	3,724	3,488	2.60
Casco	36.43	3,469	37.8	110.9	1,958	1,327	2.61
Chebeague Island	5.02	333	49.0	66.3	468	170	2.09
Cumberland	46.37	6,809	39.4	274.6	2,945	2,548	2.81
Falmouth	37.41	10,310	40.7	348.1	4,169	3,948	2.61
Freeport	46.48	7,800	39.8	224.8	3,276	3,065	2.54
Frye Island	1.6	0	0	0	366	0	0
Gorham	51.27	14,141	34.3	279.2	5,051	4,875	2.90
Gray	45.98	6,820	37.4	157.7	3,202	2,637	2.59
Harpswell	83.92	5,239	45.3	216.7	3,701	2,340	2.24
Harrison	33.86	2,315	39.9	70.1	1,430	920	2.52
Long Island	10.39	202	44.3	141.2	353	93	2.17
Naples	37.15	3,274	39.5	102.9	2,381	1,297	2.52
New Gloucester	47.78	4,803	35.5	102	1,889	1,761	2.73
North Yarmouth	21.33	3,210	37.8	151.9	1,142	1,118	2.87
Portland	52.57	64,249	35.7	3,029.20	31,862	29,714	2.16
Pownal	22.95	1,491	41	65	567	560	2.66
Raymond	46.24	4,299	37.8	129.3	2,534	1,616	2.66
Scarborough	55.32	16,970	38.8	355.7	7,233	6,462	2.63
Sebago	46.1	1,433	42.4	43.7	1,240	584	2.45
South Portland	14.3	23,324	37.9	1,944.70	10,349	10,047	2.32
Standish	83.69	9,285	33.8	157.2	3,987	3,205	2.90
Westbrook	17.06	16,142	37.8	956.9	7,089	6,863	2.35
Windham	50.28	14,904	36.5	319.3	6,088	5,522	2.70
Yarmouth	22.78	8,360	41.6	626.7	3,704	3,432	2.44
TOTAL	1,127.87	265,612	37.6	235.5	122,600	107,989	2.50


Municipal Boundaries
N
W
E
S
Cumberland County
Harrison
Bridgton
Naples
Casco
New Gloucester
Raymond
Sebago
Sebago Lake
Gray
Pownal
Brunswick
Freeport
North Yarmouth
Frye Island
Baldwin
Yarmouth
Windham
Cumberland
Harpswell
Standish
Falmouth
Gorham
Westbrook
Portland
Chebeague Island
Long Island
South Portland
Cape Elizabeth
Scarborough
Casco Bay
95
295
Data Source:
Maine Office of GIS
0 3.5 7 14
Miles

COUNTY DEMOGRAPHIC PROFILE – Cumberland County, State of Maine (from 2000 U.S. Census data)

Measure	2000 – County	1990 – County	2000 – Maine	2000 – US
Population				
Total Population	265,612	243,135	1,274,923	281,421,906
% White	96.7%	98.05%	96.9%	75.1%
% Black	1.4%	.64%	0.5%	12.3%
% American Indian	0.7%	.26%	0.6%	0.9%
% Asian	1.7%	.88%	0.7%	3.6%
% Native Hawaiian or other Pacific Islander	0.0%	0.0%	0.0%	0.1%
% Other	0.7%	.16%	0.2%	0.1%
% Persons reporting two or more races			1.0%	2.4%
% Hispanic Origin	1.0%	.64%	0.7%	12.5%
Households				
Total Households	107,989	94,512	518,200	105,480,101
Avg. Household Size	2.38	2.49	2.39	2.6
Income				
Median Household Income ($)	44,048	32,286	37,240	41,994
Persons below poverty, % 1999	7.9%	8.0%	10.9%	12.4%
Sex and Age				
% Female	51.6%	52.0%	51.3%	50.9%
% Male	48.4%	48.0%	49.7%	49.1%
% Under 18 years	23.3%	23.4%	23.6%	25.69%
% 18 years to 64 years	63.4%	63.5%	62.0%	61.9%
% 65 years and over	13.3%	13.1%	14.4%	12.4%
Population density (per sq. mile)	235.5	215.6	41.3	79.6

SECTION II - PREREQUISITES

ADOPTION BY THE LOCAL GOVERNING BODY

Requirement §201.6(c)(5):	[The local hazard mitigation plan shall include] documentation that the plan has been formally adopted by the governing body of the jurisdiction requesting approval of the plan (e.g., City Council, County Commissioner, Tribal Council).
Requirement §201.6(c)(5):	For multi-jurisdictional plans, each jurisdiction requesting approval of the plan must document that it has been formally adopted.

RESOLUTION OF ADOPTION

Whereas, the cities and towns of Cumberland County, in the State of Maine, recognize that natural hazards create a risk of harm to persons and damage to property; and

Whereas, the cities and towns of Cumberland County recognize that implementing certain measures may reduce the risk of harm to persons and damage to property resulting from these natural hazards;

Therefore, the Cumberland County Commissioners, on behalf of the County hereby adopt the 2011 Cumberland County Hazard Mitigation Plan.

AUTHORIZING SIGNATURES

_____ _____
Commissioner, Cumberland County Date

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Commissioner, Cumberland County Date

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Commissioner, Cumberland County Date

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Therefore, the Board of Selectmen, on behalf of the Town of Baldwin hereby adopts the 2011 Cumberland County Hazard Mitigation Plan.

AUTHORIZING SIGNATURES

_____ _____

Selectman, Baldwin Date

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Selectman, Baldwin Date

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Selectman, Baldwin Date

SECTION II - PREREQUISITES

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Therefore, the Town Selectmen, on behalf of the Town of Bridgton hereby adopt the 2011 Cumberland County Hazard Mitigation Plan.

AUTHORIZING SIGNATURES

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Selectman, Bridgton Date

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Therefore, the Town Council, on behalf of the Town of Brunswick hereby adopts the 2011 Cumberland County Hazard Mitigation Plan.

AUTHORIZING SIGNATURES

Councilor, Brunswick	Date
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Therefore, the Town Council, on behalf of the Town of Cape Elizabeth hereby adopts the 2011 Cumberland County Hazard Mitigation Plan.

AUTHORIZING SIGNATURES

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Councilor, Cape Elizabeth Date

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Whereas, the cities and towns of Cumberland County recognize that implementing certain measures may reduce the risk of harm to persons and damage to property resulting from these natural hazards;

Therefore, the Town Selectmen, on behalf of the Town of Casco hereby adopt the 2011 Cumberland County Hazard Mitigation Plan.

AUTHORIZING SIGNATURES

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Selectman, Casco Date

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Therefore, the Town Selectmen, on behalf of the Town of Chebeague Island hereby adopt the 2011 Cumberland County Hazard Mitigation Plan.

AUTHORIZING SIGNATURES

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Selectman, Chebeague Island Date

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Whereas, the cities and towns of Cumberland County recognize that implementing certain measures may reduce the risk of harm to persons and damage to property resulting from these natural hazards;

Therefore, the Town Council, on behalf of the Town of Cumberland hereby adopts the 2011 Cumberland County Hazard Mitigation Plan.

AUTHORIZING SIGNATURES

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Councilor, Cumberland Date

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Therefore, the Town Council, on behalf of the Town of Falmouth hereby adopts the 2011 Cumberland County Hazard Mitigation Plan.

AUTHORIZING SIGNATURES

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Councilor, Falmouth Date

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Therefore, the Town Council, on behalf of the Town of Freeport hereby adopts the 2011 Cumberland County Hazard Mitigation Plan.

AUTHORIZING SIGNATURES

_____ _____
Councilor, Freeport Date

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Whereas, the cities and towns of Cumberland County recognize that implementing certain measures may reduce the risk of harm to persons and damage to property resulting from these natural hazards;

Therefore, the Town Selectmen, on behalf of the Town of Frye Island hereby adopt the 2011 Cumberland County Hazard Mitigation Plan.

AUTHORIZING SIGNATURES

_____ _____

Selectman, Frye Island Date

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Therefore, the Town Council, on behalf of the Town of Gorham hereby adopts the 2011 Cumberland County Hazard Mitigation Plan.

AUTHORIZING SIGNATURES

_____ _____
Councilor, Gorham Date

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Councilor, Gorham Date

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Therefore, the Town Council, on behalf of the Town of Gray hereby adopts the 2011 Cumberland County Hazard Mitigation Plan.

AUTHORIZING SIGNATURES

_____ _____
Councilor, Gray Date

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Therefore, the Town Selectmen, on behalf of the Town of Harpswell hereby adopt the 2011 Cumberland County Hazard Mitigation Plan.

AUTHORIZING SIGNATURES

_____ _____
Selectman, Harpswell Date

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Selectman, Harpswell Date

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Selectman, Harpswell Date

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Therefore, the Town Selectmen, on behalf of the Town of Harrison hereby adopt the 2011 Cumberland County Hazard Mitigation Plan.

AUTHORIZING SIGNATURES

_____ _____
Selectman, Harrison Date

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Therefore, the Town Selectmen, on behalf of the Town of Long Island hereby adopt the 2011 Cumberland County Hazard Mitigation Plan.

AUTHORIZING SIGNATURES

_____ _____
Selectman, Long Island Date

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Selectman, Long Island Date

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Selectman, Long Island Date

SECTION II - PREREQUISITES

ADOPTION BY THE JURISDICTIONS

Requirement §201.6(c)(5):	[The local hazard mitigation plan shall include] documentation that the plan has been formally adopted by the governing body of the jurisdiction requesting approval of the plan (e.g., City Council, County Commissioner, Tribal Council).
Requirement §201.6(c)(5):	For multi-jurisdictional plans, each jurisdiction requesting approval of the plan must document that it has been formally adopted.

RESOLUTION OF ADOPTION

Whereas, the cities and towns of Cumberland County, in the State of Maine, recognize that natural hazards create a risk of harm to persons and damage to property; and

Whereas, the cities and towns of Cumberland County recognize that implementing certain measures may reduce the risk of harm to persons and damage to property resulting from these natural hazards;

Therefore, the Town Selectmen, on behalf of the Town of Naples hereby adopt the 2011 Cumberland County Hazard Mitigation Plan.

AUTHORIZING SIGNATURES

_____ _____
Selectman, Naples Date

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Selectman, Naples Date

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Selectman, Naples Date

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Selectman, Naples Date

SECTION II - PREREQUISITES

ADOPTION BY THE JURISDICTIONS

Requirement §201.6(c)(5):	[The local hazard mitigation plan shall include] documentation that the plan has been formally adopted by the governing body of the jurisdiction requesting approval of the plan (e.g., City Council, County Commissioner, Tribal Council).
Requirement §201.6(c)(5):	For multi-jurisdictional plans, each jurisdiction requesting approval of the plan must document that it has been formally adopted.

RESOLUTION OF ADOPTION

Whereas, the cities and towns of Cumberland County, in the State of Maine, recognize that natural hazards create a risk of harm to persons and damage to property; and

Whereas, the cities and towns of Cumberland County recognize that implementing certain measures may reduce the risk of harm to persons and damage to property resulting from these natural hazards;

Therefore, the Town Selectmen, on behalf of the Town of New Gloucester hereby adopt the 2011 Cumberland County Hazard Mitigation Plan.

AUTHORIZING SIGNATURES

_____ _____
Selectman, New Gloucester Date

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Selectman, New Gloucester Date

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Selectman, New Gloucester Date

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Selectman, New Gloucester Date

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Selectman, New Gloucester Date

SECTION II - PREREQUISITES

ADOPTION BY THE JURISDICTIONS

Requirement §201.6(c)(5):	[The local hazard mitigation plan shall include] documentation that the plan has been formally adopted by the governing body of the jurisdiction requesting approval of the plan (e.g., City Council, County Commissioner, Tribal Council).
Requirement §201.6(c)(5):	For multi-jurisdictional plans, each jurisdiction requesting approval of the plan must document that it has been formally adopted.

RESOLUTION OF ADOPTION

Whereas, the cities and towns of Cumberland County, in the State of Maine, recognize that natural hazards create a risk of harm to persons and damage to property; and

Whereas, the cities and towns of Cumberland County recognize that implementing certain measures may reduce the risk of harm to persons and damage to property resulting from these natural hazards;

Therefore, the Town Selectmen, on behalf of the Town of North Yarmouth hereby adopt the 2011 Cumberland County Hazard Mitigation Plan.

AUTHORIZING SIGNATURES

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Selectman, North Yarmouth Date

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Selectman, North Yarmouth Date

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Selectman, North Yarmouth Date

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Selectman, North Yarmouth Date

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Selectman, North Yarmouth Date

SECTION II - PREREQUISITES

ADOPTION BY THE JURISDICTIONS

Requirement §201.6(c)(5):	[The local hazard mitigation plan shall include] documentation that the plan has been formally adopted by the governing body of the jurisdiction requesting approval of the plan (e.g., City Council, County Commissioner, Tribal Council).
Requirement §201.6(c)(5):	For multi-jurisdictional plans, each jurisdiction requesting approval of the plan must document that it has been formally adopted.

RESOLUTION OF ADOPTION

Whereas, the cities and towns of Cumberland County, in the State of Maine, recognize that natural hazards create a risk of harm to persons and damage to property; and

Whereas, the cities and towns of Cumberland County recognize that implementing certain measures may reduce the risk of harm to persons and damage to property resulting from these natural hazards;

Therefore, the City Council, on behalf of the City of Portland hereby adopts the 2011 Cumberland County Hazard Mitigation Plan.

AUTHORIZING SIGNATURES

_____ _____
Councilor, Portland Date

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Councilor, Portland Date

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Councilor, Portland Date

SECTION II - PREREQUISITES

ADOPTION BY THE JURISDICTIONS

Requirement §201.6(c)(5):	[The local hazard mitigation plan shall include] documentation that the plan has been formally adopted by the governing body of the jurisdiction requesting approval of the plan (e.g., City Council, County Commissioner, Tribal Council).
Requirement §201.6(c)(5):	For multi-jurisdictional plans, each jurisdiction requesting approval of the plan must document that it has been formally adopted.

RESOLUTION OF ADOPTION

Whereas, the cities and towns of Cumberland County, in the State of Maine, recognize that natural hazards create a risk of harm to persons and damage to property; and

Whereas, the cities and towns of Cumberland County recognize that implementing certain measures may reduce the risk of harm to persons and damage to property resulting from these natural hazards;

Therefore, the Town Selectmen, on behalf of the Town of Pownal hereby adopt the 2011 Cumberland County Hazard Mitigation Plan.

AUTHORIZING SIGNATURES

_____ _____
Selectman, Pownal Date

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Selectman, Pownal Date

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Selectman, Pownal Date

SECTION II - PREREQUISITES

ADOPTION BY THE JURISDICTIONS

Requirement §201.6(c)(5):	[The local hazard mitigation plan shall include] documentation that the plan has been formally adopted by the governing body of the jurisdiction requesting approval of the plan (e.g., City Council, County Commissioner, Tribal Council).
Requirement §201.6(c)(5):	For multi-jurisdictional plans, each jurisdiction requesting approval of the plan must document that it has been formally adopted.

RESOLUTION OF ADOPTION

Whereas, the cities and towns of Cumberland County, in the State of Maine, recognize that natural hazards create a risk of harm to persons and damage to property; and

Whereas, the cities and towns of Cumberland County recognize that implementing certain measures may reduce the risk of harm to persons and damage to property resulting from these natural hazards;

Therefore, the Town Selectmen, on behalf of the Town of Raymond hereby adopt the 2011 Cumberland County Hazard Mitigation Plan.

AUTHORIZING SIGNATURES

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Selectman, Raymond Date

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Selectman, Raymond Date

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Selectman, Raymond Date

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Selectman, Raymond Date

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Selectman, Raymond Date

SECTION II - PREREQUISITES

ADOPTION BY THE JURISDICTIONS

Requirement §201.6(c)(5):	[The local hazard mitigation plan shall include] documentation that the plan has been formally adopted by the governing body of the jurisdiction requesting approval of the plan (e.g., City Council, County Commissioner, Tribal Council).
Requirement §201.6(c)(5):	For multi-jurisdictional plans, each jurisdiction requesting approval of the plan must document that it has been formally adopted.

RESOLUTION OF ADOPTION

Whereas, the cities and towns of Cumberland County, in the State of Maine, recognize that natural hazards create a risk of harm to persons and damage to property; and

Whereas, the cities and towns of Cumberland County recognize that implementing certain measures may reduce the risk of harm to persons and damage to property resulting from these natural hazards;

Therefore, the Town Council, on behalf of the Town of Scarborough hereby adopts the 2011 Cumberland County Hazard Mitigation Plan.

AUTHORIZING SIGNATURES

_____ _____
Councilor, Scarborough Date

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Councilor, Scarborough Date

SECTION II - PREREQUISITES

ADOPTION BY THE JURISDICTIONS

Requirement §201.6(c)(5):	[The local hazard mitigation plan shall include] documentation that the plan has been formally adopted by the governing body of the jurisdiction requesting approval of the plan (e.g., City Council, County Commissioner, Tribal Council).
Requirement §201.6(c)(5):	For multi-jurisdictional plans, each jurisdiction requesting approval of the plan must document that it has been formally adopted.

RESOLUTION OF ADOPTION

Whereas, the cities and towns of Cumberland County, in the State of Maine, recognize that natural hazards create a risk of harm to persons and damage to property; and

Whereas, the cities and towns of Cumberland County recognize that implementing certain measures may reduce the risk of harm to persons and damage to property resulting from these natural hazards;

Therefore, the Town Selectmen, on behalf of the Town of Sebago hereby adopt the 2011 Cumberland County Hazard Mitigation Plan.

AUTHORIZING SIGNATURES

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Selectman, Sebago Date

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Selectman, Sebago Date

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Selectman, Sebago Date

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Selectman, Sebago Date

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Selectman, Sebago Date

SECTION II - PREREQUISITES

ADOPTION BY THE JURISDICTIONS

Requirement §201.6(c)(5):	[The local hazard mitigation plan shall include] documentation that the plan has been formally adopted by the governing body of the jurisdiction requesting approval of the plan (e.g., City Council, County Commissioner, Tribal Council).
Requirement §201.6(c)(5):	For multi-jurisdictional plans, each jurisdiction requesting approval of the plan must document that it has been formally adopted.

RESOLUTION OF ADOPTION

Whereas, the cities and towns of Cumberland County, in the State of Maine, recognize that natural hazards create a risk of harm to persons and damage to property; and

Whereas, the cities and towns of Cumberland County recognize that implementing certain measures may reduce the risk of harm to persons and damage to property resulting from these natural hazards;

Therefore, the City Council, on behalf of the City of South Portland hereby adopts the 2011 Cumberland County Hazard Mitigation Plan.

AUTHORIZING SIGNATURES

_____ _____
Councilor, South Portland Date

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Councilor, South Portland Date

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Councilor, South Portland Date

SECTION II - PREREQUISITES

ADOPTION BY THE JURISDICTIONS

Requirement §201.6(c)(5):	[The local hazard mitigation plan shall include] documentation that the plan has been formally adopted by the governing body of the jurisdiction requesting approval of the plan (e.g., City Council, County Commissioner, Tribal Council).
Requirement §201.6(c)(5):	For multi-jurisdictional plans, each jurisdiction requesting approval of the plan must document that it has been formally adopted.

RESOLUTION OF ADOPTION

Whereas, the cities and towns of Cumberland County, in the State of Maine, recognize that natural hazards create a risk of harm to persons and damage to property; and

Whereas, the cities and towns of Cumberland County recognize that implementing certain measures may reduce the risk of harm to persons and damage to property resulting from these natural hazards;

Therefore, the Town Council, on behalf of the Town of Standish hereby adopts the 2011 Cumberland County Hazard Mitigation Plan.

AUTHORIZING SIGNATURES

_____ _____
Councilor, Standish Date

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Councilor, Standish Date

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Councilor, Standish Date

SECTION II - PREREQUISITES

ADOPTION BY THE JURISDICTIONS

Requirement §201.6(c)(5):	[The local hazard mitigation plan shall include] documentation that the plan has been formally adopted by the governing body of the jurisdiction requesting approval of the plan (e.g., City Council, County Commissioner, Tribal Council).
Requirement §201.6(c)(5):	For multi-jurisdictional plans, each jurisdiction requesting approval of the plan must document that it has been formally adopted.

RESOLUTION OF ADOPTION

Whereas, the cities and towns of Cumberland County, in the State of Maine, recognize that natural hazards create a risk of harm to persons and damage to property; and

Whereas, the cities and towns of Cumberland County recognize that implementing certain measures may reduce the risk of harm to persons and damage to property resulting from these natural hazards;

Therefore, the City Council, on behalf of the City of Westbrook hereby adopts the 2011 Cumberland County Hazard Mitigation Plan.

AUTHORIZING SIGNATURES

_____ _____
Councilor, Westbrook Date

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Councilor, Westbrook Date

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Councilor, Westbrook Date

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Councilor, Westbrook Date

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Councilor, Westbrook Date

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Councilor, Westbrook Date

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Councilor, Westbrook Date

SECTION II - PREREQUISITES

ADOPTION BY THE JURISDICTIONS

Requirement §201.6(c)(5):	[The local hazard mitigation plan shall include] documentation that the plan has been formally adopted by the governing body of the jurisdiction requesting approval of the plan (e.g., City Council, County Commissioner, Tribal Council).
Requirement §201.6(c)(5):	For multi-jurisdictional plans, each jurisdiction requesting approval of the plan must document that it has been formally adopted.

RESOLUTION OF ADOPTION

Whereas, the cities and towns of Cumberland County, in the State of Maine, recognize that natural hazards create a risk of harm to persons and damage to property; and

Whereas, the cities and towns of Cumberland County recognize that implementing certain measures may reduce the risk of harm to persons and damage to property resulting from these natural hazards;

Therefore, the Town Council, on behalf of the Town of Windham hereby adopts the 2011 Cumberland County Hazard Mitigation Plan.

AUTHORIZING SIGNATURES

_____ _____
Councilor, Windham Date

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Councilor, Windham Date

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Councilor, Windham Date

SECTION II - PREREQUISITES

ADOPTION BY THE JURISDICTIONS

Requirement §201.6(c)(5):	[The local hazard mitigation plan shall include] documentation that the plan has been formally adopted by the governing body of the jurisdiction requesting approval of the plan (e.g., City Council, County Commissioner, Tribal Council).
Requirement §201.6(c)(5):	For multi-jurisdictional plans, each jurisdiction requesting approval of the plan must document that it has been formally adopted.

RESOLUTION OF ADOPTION

Whereas, the cities and towns of Cumberland County, in the State of Maine, recognize that natural hazards create a risk of harm to persons and damage to property; and

Whereas, the cities and towns of Cumberland County recognize that implementing certain measures may reduce the risk of harm to persons and damage to property resulting from these natural hazards;

Therefore, the Town Council, on behalf of the Town of Yarmouth hereby adopts the 2011 Cumberland County Hazard Mitigation Plan.

AUTHORIZING SIGNATURES

_____ _____
Councilor, Yarmouth Date

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Councilor, Yarmouth Date

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Councilor, Yarmouth Date

SECTION III – PLANNING PROCESS

MULTI-JURISDICTIONAL PLANNING PARTICIPATION

Requirement §201.6(a)(3):	Multi-jurisdictional plans (e.g. watershed plans) may be accepted, as appropriate, as long as each jurisdiction has participated in the process.

The Cumberland County Hazard Mitigation Plan is a multi-jurisdictional plan originally prepared and updated by a Hazard Mitigation Planning Team coordinated by the Cumberland County Soil and Water Conservation District and the Cumberland County Emergency Management Agency. Representatives participated from state, county and municipal governments, regional planning commission, private, volunteer, and business sectors. The plan development and update process included representatives from all 28 municipalities, who provided input regarding prioritization of hazards, assessment of vulnerabilities and risks, and the identification and prioritization of mitigation goals and measures.

Original Countywide 2005 Hazard Mitigation Plan Participants:

Name	Affiliation
Steve Goodwin	Fairchild Semiconductor
Bill Soares	American Red Cross, Portland Chapter
Brad Rounds	American Red Cross, Portland Chapter
Kevin Joyce	Cumberland County Sheriff's Office
Jerry Cayer	City of Portland
Jo Linder, M.D.	City of Portland
Roger Boyington	Maine Medical Center
Jeff Sanborn	Maine Medical Center
Jeff Thomas	Mercy Hospital
Rebecca Miller	Northern New England Poison Control Center
Neal Allen	Greater Portland Council of Governments
David Willauer	Greater Portland Council of Governments
Lynn Gaudette	Goodwill Industries of Northern New England
Peter Dietz	Ingraham Volunteers
Victoria Doughty	People's Regional Opportunity Program
Tom Bryant	Central Maine Power Company
Joe Purington	Central Maine Power Company
Tim Hendrix	Portland Pipe Line
Richard Clark	Portland Water District
Tom Dobbins	Sprague Energy Corporation
Dick Powell	Verizon
Anne-Marie Brett	Cumberland County EMA
David Feeney	Cumberland County EMA
Betty McInnes	Cumberland County Soil and Water Conservation District
Jean Wheat	SAPPI
Tom Howard	SAPPI
Jon Giles	City of Portland, GIS Department
Christina Roy	Mitigation GIS intern
Bonnie Cowle Boulter	SPO, Flood Management Program
Jeff Edelstein	Hazard Mitigation Facilitator

Original Municipal 2005 HMP Participants (List of 2010 Update participants follows in this section):

Name	Municipal Position	Municipality
James Kidder	Public Works Director	Bridgton
William Morrisseau	EM Director	Bridgton
Gary Howard	Fire Chief/EMA	Brunswick
John Foster	Public Works Director	Brunswick
Robert Malley	Public Works Director	Cape Elizabeth
Rory Putnam	EMA Director	Falmouth
Tony Hayes	Public Works Director	Falmouth
Johanna Hanselman	GA Administrator	Freeport
James Plummer	Public Works Director	Freeport
Albert Presgraves	Town Engineer	Freeport
Bob Burns	Public Works Director	Gorham
Steve LaVallee	Public Works Director	Gray
Noel Musson	Planner	Harpswell
Jay Chace	Deputy Town Administrator	Harpswell
William P. Labbe	EMA	Harpswell
Michael Thorne	Town Manager	Harrison
Sam Cousins	Road Foreman	Harrison
Phil Covelli	Town Manager	Naples
Roland Mayberry	Road Commissioner	Naples
Scott Hodgman	Assistant Foreman	New Gloucester
Rosemary Kulow	Town Manager	New Gloucester
Bill Waterman	Public Works Director	New Gloucester
Kathi Earley	Engineering Manager	Portland
Anthony Dater	Town Planner	Pownal
Elisa Trepanier	GIS Coordinator	Raymond
Nathan White	Public Works Director	Raymond
Mike Shaw	Public Works Director	Scarborough
Michael Thurlow	Fire Chief	Scarborough
Mitch Manseau	Town Manager	Sebago
Tex Hauser	Planning Director	South Portland
Edward Googins	Police Chief	South Portland
Tom Meyers	Transportation & Waterfront Director/EMA	South Portland
Steven Johnson	Public Works Director	South Portland
Kevin Guimond	Fire Chief	South Portland
Patrick Cloutier	Water Resources Protection Director	South Portland
Alton Benson	Planning Board Administrator	Standish
Roger Mosley	Public Works Director	Standish
Tim Pellerin	Deputy Fire Chief/EMA	Westbrook
Roger Timmons	Community Development	Windham
Jonathan Champagne	Code Enforcement	Windham
Doug Fortier	Deputy Public Works Director	Windham
Dan Jellis	Town Engineer	Yarmouth

2011 Update - Municipal Hazard Mitigation Planning Participants:

Name	Municipal Position	Municipality
Lori Roth	Planner	CCEMA
JoAnn Mooney	State Hazard Mitigation Officer	MEMA
Elizabeth Barton	Natural Hazards Planner	MEMA
Betty McInnes	District Manager	CCSWCD
Dan Jellis	Town Engineer	Yarmouth
Christopher Baldwin	District Engineer	CCSWCD
Dan Nowell	Public Works Director	Sebago
Irene Morton	Casco EMA Director	Casco
David Morton	Town Manager/Road Commissioner	Casco
Nate Schools	Cumberland EMA Director	Cumberland
Jim Budway	Director CCEMA	CCEMA
Anne-Marie Brett	Deputy Director CCEMA	CCEMA
Doug Fortier	Local EMA Director	Windham
Dick Boulanger	Local Business owner/resident	Windham
Jeff Sanborn	Local EMA Director	Baldwin
Norman McKinney	Selectman	Baldwin
Alan Dolloff	Selectman	Baldwin
Dan Nowell	Public Works Director	Sebago
Bill Morriseau	EMA Director	Bridgton
Alan Monoian	Director of Economic & Community Development	Bridgton
Don Brown	Selectman	Baldwin
Dave Thomes	Water resource protection	South Portland
Joe Colucci	Public Works	South Portland
Fred Dillon	Stormwater Coordinator	South Portland
Jerry Collett	Sewer Maintenance Foreman	South Portland
Ralph Monroe	Local EMA Director	Chebeague Island
Mike Thurlow	EMA Director/Fire Chief	Scarborough
Mike Shaw	Public Works Director	Scarborough
Bob Burns	Public Works Director	Gorham
Ray LaPlant	Local EMA Director	Harrison
Bill Labbe	Local EMA Director	Harpswell
Kristi Eiane	Town Administrator	Harpswell
Darrell Fournier	Local EMA Director/Fire Chief	Freeport
Jim Plummer	Publics Work Director	Freeport
Albert Presgraves	Town Engineer	Freeport
Howard Rice	Local EMA Director/Fire Chief	Falmouth
Jay Reynolds	Public Works Director	Falmouth
Bob Malley	Public Works Director	Cape Elizabeth
Shawn Bennett	Public Works Director	Pownal
Arty Ledoux	Public Services Director	Westbrook
Tom Eldridge	Public Works Director	Westbrook
Steve Lavallee	Public Works Director	Gray
Galen Morrison	Deputy Fire Chief	Gray

Name	Municipal Position	Municipality
Bruce Tupper	Asst. Fire Chief/ Local EMA Director	Raymond
Nathan White	Public Works Director	Raymond
Ben Haskell	Captain of Public Safety/Fire/EMA	Standish
Roger Mosely	Public Works Director	Standish
Dick Brobst	Local EMA Director	North Yarmouth
Marnie Diffin	Town Administrator	North Yarmouth
Derik Goodine	Town Manager	Naples
Coleman Clark	Local EMA Director	Long Island
Kenneth Brillant	Local EMA Director/Fire Chief	Brunswick
John Foster	Public Works Director	Brunswick
Michael Bobinsky	Director of Public Services	Portland
John Emerson	Utility Coordinator	Portland
Steve Early	Operations Manager	Portland
Ted Shane	Public Works Director	New Gloucester
Wayne Fornier	Town Manager	Frye Island
Jim Bruni	Hazard Mitigation Specialist	FEMA
Judy Meloney	Hazard Mitigation Specialist	FEMA

DOCUMENTATION OF THE PLANNING PROCESS

Requirement §201.6(b):	In order to develop a more comprehensive approach to reducing the effects of natural disasters, the planning process shall include: (1) An opportunity for the public to comment on the plan during the drafting stage and prior to plan approval; (2) An opportunity for neighboring communities, local and regional agencies involved in hazard mitigation activities, and agencies that have the authority to regulate development, as well as businesses, academia and other private and non-profit interests to be involved in the planning process; (3) Review and incorporation, if appropriate, of existing plans, studies, reports, and technical information.

Requirement §201.6(c)(1):	[The plan shall document] the planning process used to develop the plan, including how it was prepared, who was involved in the process, and how the public was involved.

Table 1: 2011 Update – Summary of Local Hazard Mitigation Planning Participation:

Municipality	Survey & Mailing Response	HMP Project Meeting Participation	Email Correspondence	Phone Conversations
Baldwin	X	X	X	X
Bridgton		X	X	X
Brunswick	X	X	X	
Cape Elizabeth	X	X	X	
Casco		X	X	
Chebeague		X	X	X
Cumberland	X	X	X	
Falmouth	X	X	X	X

Municipality	Survey & Mailing Response	HMP Project Meeting Participation	Email Correspondence	Phone Conversations
Freeport		X	X	
Frye Island		X	X	X
Gorham		X	X	
Gray		X	X	
Harpswell		X	X	
Harrison	X	X	X	
Long Island		X	X	X
Naples		X	X	
New Gloucester	X	X	X	
North Yarmouth	X	X	X	
Portland		X	X	X
Pownal		X	X	
Raymond		X	X	
Scarborough	X	X	X	X
Sebago		X	X	X
South Portland	X	X	X	
Standish	X	X	X	
Westbrook		X	X	
Windham	X	X	X	
Yarmouth		X	X	

The lead agency in the preparation of the Cumberland County Hazard Mitigation Plan was the Cumberland County Emergency Management Agency (CCEMA). CCEMA contracted with the Cumberland County Soil and Water Conservation District (CCSWCD) to develop the plan. One of the primary reasons for this partnership between the CCEMA and the CCSWCD was that the CCSWCD has been facilitating the activities of the Casco Bay Interlocal Stormwater Working Group (ISWG) for the past seven and one half years.

The ISWG is made up of eleven cities and towns in Cumberland County and several neighboring communities including Biddeford, Saco and Auburn. The ISWG consists of public works directors, planners, municipal engineers and code enforcement officers, as well as representatives from the Maine Turnpike Authority and the Maine DEP and other organizations. The ISWG has been working on the development and implementation of regional approaches to stormwater management. A particular focus of the ISWG has been the development of an inter-municipal approach to meeting the requirements of the National Pollutant Discharge Elimination System Stormwater Phase II program, administered by the U.S. EPA and the Maine Department of Environmental Protection. Because flooding is the highest priority hazard in the County and because flooding is closely linked with stormwater management, there is a natural linkage between hazard mitigation and the work of the ISWG.

An initial meeting of the county-wide hazard mitigation planning team (see above for list of participants) was held on February 3, 2004. Four workshops were held for municipal representatives on March 2, 2004, March 4, 2004 (two workshops), and April 6, 2004. Data collection worksheets were developed and distributed to all of the municipalities.

The public was given the opportunity to comment on the plan during the drafting stage and prior to plan approval, by issuing press releases, posting the draft plan on the county and municipal websites, and through hearings in each municipality. Opportunities were provided for involvement in the planning process by neighboring communities, local and regional agencies involved in hazard mitigation activities, and agencies that have the authority to regulate development, as well as businesses, academia and other private and non-profit interests.

CONTINUED PLANNING PROCESS

The lead agency in the 2011 update of the Cumberland County Hazard Mitigation Plan was the Cumberland County Emergency Management Agency (CCEMA). CCEMA contracted with the Cumberland County Soil and Water Conservation District (CCSWCD) to provide assistance with updating of the original 2005 plan. At the staff level (Planning Team), development of the 2011 update was facilitated by Mr. Jim Budway (Director, CCEMA) with Ms. Lori Roth (Planner, CCEMA) and Mr. Christopher Baldwin, P.E. (District Engineer, CCSWCD) providing data collection and report updating support.

The goal of the update planning team was to review and analyze each section of the HMP and provide revision as part of the update process. In order to help determine what was important to update the planning team used the following input:

- The 2005 Cumberland County Hazard Mitigation Plan
- The 2007 State of Maine Hazard Mitigation Plan
- The Local Mitigation Plan Crosswalk
- Guidelines for Preparing County Hazard Mitigation Plans
- Disaster Declarations since completion of the 2005 plan
- Information obtained from plans, reports and studies completed since the 2005 plan
- Information obtained from the local EMA directors and public Works Directors
- Information obtained from the public during the drafting of the update

The Hazard Mitigation Planning process began, in August 2009. A detailed review of the status of projects listed in the 2005 HMP was conducted and a Hazard Mitigation Project Survey was sent electronically and mailed in hard copy to every municipality in Cumberland County (samples for Scarborough are included in Appendix A). The survey was conducted in preparation for the 2010 Cumberland County Hazard Mitigation Plan Review, in an effort to examine the list of mitigation measures identified by each municipality and access the progress on the mitigation goals and objectives.

Lori Roth, a planner with CCEMA, met with and interviewed representatives from each municipality. Summary of Local Planning meeting participation can be found in Table 1. Local EMA Directors were contacted by CCEMA to establish a meeting time with appropriate municipal officials to explain the plan update and to gather data supporting their mitigation projects. This data includes photographs and historical supporting documentation such as newspaper articles, invoices, equipment and personnel logs, etc. Also, site visits to project locations were conducted and Geographical Information System (GIS) data was collected using a Global Relief Technologies (GRT) Personal Digital Assistant (PDA) provided by the Maine Emergency Management Agency (MEMA). Consideration was given to new mitigation projects for incorporation in the 2010 HMP update.

The planning team met several times in January 2010 to kick-off the update effort and continued to meet monthly for coordination meetings throughout the 2010 update planning period to review the existing plan, assess the project schedule and revise original plan sections. The update planning process included the review and analysis of each section of the original plan and revisions to each section as necessary. Each section of the updated plan was also reviewed against the plan review crosswalk provided by FEMA and MEMA.

After five years of intense storms and multiple presidential declarations, municipal officials have provided detailed project descriptions for the update that enhance the plan's discussion by providing status on their projects. For the purposes of Section V – Mitigation Measures and the identified projects for each municipality, existing projects from the 2005 plan have a status of deferred (see complete list of 2005 projects in Appendix B), and new and completed projects are listed as such in the status column. In addition, Appendix B contains a table identifying all the measures incorporated by each municipality during the last five years.

A twenty-eighth municipality has been added to this multi-jurisdiction plan. The island community of Chebeague Island became incorporated on July 1, 2007. Chebeague Island had been included as part of the Town of Cumberland in the 2005 HMP. For the purposes of this update, Chebeague Island and its associated mitigation projects have been separated and listed on their own.

Recent Disaster Declarations for the County declared since the 2005 publication of the HMP are as follows:

DATE	DISASTER #	DISASTER NAME/TYPE
29-Jun-05	DR-1591	Flooding – 29 Mar to 3 May
25-May-06	DR-1644	Flooding – Mother's Day Storm
20-Apr-07	DR-1691	Flooding – St. Patrick's Day Storm
25-Apr-07	DR-1693	Flooding – Patriot's Day Storm
09-Sep-08	DR-1788	Floods – Southern Maine
09-Jan-09	DR-1815	Severe Wind & Flooding
30-Jul-09	DR-1852	Severe Rain Event – Flooding & Landslides*
15-Apr-10	DR-1891	Severe Winter Storm – Flooding

* Declaration did not include Cumberland County; however, surrounding Counties were affected and Cumberland County did have damages but did not meet the county damage threshold.

The updating of the HMP was accomplished through a number of steps which began with an initial August 31, 2009 mailing to the EMA Directors of each of the 28 municipalities. The mailing (an example of which is included in Appendix A) was sent out by CCEMA during the summer of 2009. It requested that recipients review the mitigation measures presented in the 2005 HMP and provide information on the progress of meeting the mitigation goals and objectives stated. In addition, it requested a list of any additional projects that should be added since the publication of the 2005 HMP.

Follow-up e-mails were then sent to each municipality, explaining the HMP update process and requesting a meeting (example in Appendix A). D-2 Tracker and Yes/No Eligibility sheets were attached to the e-mails. This correspondence began January 11, 2010 and was completed during the Spring of 2010.

CCEMA then scheduled site visits with each of the Municipality EMA Directors or staff person identified as the contact for the municipality. Data collection included a review and update on the progress of each of the projects previously identified in the 2005 HMP, as well as, GIS mapping of the project locations. In addition, new projects and mitigation measures were reviewed in the field with the municipality representative. For each project identified (2005 or 2010), a project sheet with handwritten notes was completed and then used to create a project report. Where made available, photographs of historical damages were incorporated into the reports. The data collected from each municipality was then used to update the risk assessment and mitigation measures sections of the HMP. Example data collection sheets are included in the Appendix B.

Updates on the progress of the HMP update have been included in the weekly County Manager Updates and monthly Local EMA Directors meetings (meeting agendas and attendees included in Appendix A) conducted by Jim Budway, County EMA Director. Information on the update process has been chronicled in the CCEMA monthly newsletter, CCEMA website and in the CCSWCD's summer newsletter (Appendix A).

Throughout the process, the public had the opportunity to comment on the updated plan during the drafting stage and prior to plan approval, by issuing press releases and posting the draft plan on the County website. Many of the individuals who assisted with the development of the original 2005 plan are still in similar responsible positions and became involved in the 2011 update (e.g. EMA Directors, Public Works Directors, Selectman, Councilors). As

such, it is not expected that a significant number of municipalities will require intensive education on the contents and value of the plan. This outreach will be provided as necessary by CCEMA and/or CCSWCD during the scheduled project planning meetings.

CCSWCD reviewed the 2005 County HMP and 2007 State Plan and incorporated them as appropriate. In addition, since the severity of winter and summer storms appears to continue to increase, CCSWCD reviewed recent findings by the United States Global Change Research Program and the Casco Bay Estuary Partnership at the University of Southern Maine related to climate change issues that could affect future precipitation and temperature trends and other flood related hazards associated with sea level rise. Provided within Section IV – Risk Assessment is a more detailed summary of these studies findings and how they may relate to mitigation planning. The final draft plan was provided to the Casco Bay Estuary Partnership for their review and endorsement, as well as, to the community representatives that make up ISWG.

Other press releases, letters and memos relating to participation by the municipalities and the public in the update of the 2005 HMP can be found in the Appendix A. As evidenced above, every opportunity was provided for involvement in the planning and updating process by neighboring communities, local and regional agencies involved in hazard mitigation activities, and agencies that have the authority to regulate development, as well as businesses, academia and other private and non-profit interests.

In addition, two "public meetings" were conducted during the final draft review phase. CCEMA hosted two sessions of public comment meetings at the CCEMA bunker. A press release was issued identifying the times and date for the meetings. The meetings were conducted on December 7, 2010 from 12:30 – 3:00 and from 6:00 – 8:30. A power point presentation on the projects section of the plan was conducted and sign-in sheets were available.

SECTION IV – RISK ASSESSMENT

INTRODUCTION

This section of the HMP identifies, profiles and assesses the vulnerability of Cumberland County to natural hazards. The risk assessment provides sufficient information to enable the county to identify and prioritize appropriate mitigation actions to reduce losses from identified hazards. This plan includes descriptions of all the potential hazards that could affect the county, along with an analysis of the county's vulnerability to those identified hazards. Specific information about numbers and types of structures, potential dollar losses, and an overall description of the land use trends in Cumberland County are included in this analysis. Because this is a multi-jurisdictional plan, the risks that affect only certain regions of the County were assessed separately in the context of the affected region.

IDENTIFYING HAZARDS

Requirement §201.6(c)(2)(i):	[The risk assessment shall include a] description of the type…of all natural hazards that can affect the jurisdiction…

Based on discussions with MEMA and the Planning Team, it was decided that because so many of the State's natural hazards tend to occur in seasonal groups, the summary table and hazard "titles" should be revised. Therefore, events such as thunderstorms, lightning and tornados will all be found under "Summer Storms" though it is possible for them to occur separately and at other times of the year. Accordingly, blizzards, ice storms, nor'easters and snow storms are grouped under "Winter Storms" even though nor'easters can occur in other seasons. Also, in considering the effect of each hazard, it became apparent that the end result was usually flooding. For that reason, "Dam Failure/Breach" will appear in the flood hazard sections of the plan.

The list below is an updated summary of the Hazard Mitigation Planning Team's identification and ranking of the natural hazards for which the County is at risk. The Planning Team split the hazards into high, medium, and low priorities, based on the results of the prioritization methodology shown at the end of this section and a review of recent declarations of natural hazards occurring within the last five years. The update does separate winter and summer storms as separate hazard events.

The mitigation planning process only focused on the four hazards in the high priority category. The two medium and six low priority hazards have not been profiled and will not be evaluated further due to their low occurrence rates; however, they may be addressed in future planning activities.

High Priority:

- Flooding
- Severe Winter Storms
- Wildfire
- Severe Summer Storms

Medium Priority:

- Coastal Erosion
- Hurricanes

Low Priority:

- Avalanche
- Blight/infestation
- Drought
- Earthquake
- Ground Subsidence
- Landslide

Hazard	How Identified	Description
Flooding (includes coastal, riverine, spring and stormwater runoff, ice jams, heavy rains)	Review of FIRM maps Review of SLOSH maps Review of past disaster declarations (FEMA) State Planning Office CCEMA/MEMA records Review of repetitive loss properties Input from municipal staff	Cumberland County has suffered repeatedly from flood hazard events, both riverine and coastal. These events have resulted in significant damage to property, economic disruption, reduced access for emergency vehicles, injury and death of persons. These events are associated with spring runoff events and coastal storms.
Dam Failure	CCEMA dam records and files MEMA Dam Safety Program	Cumberland County has a number of high and significant hazard dams. Dam breach can cause rapid downstream flooding. Included under Flooding
Severe Winter Storms	Review of past disaster declarations Input from municipal staff	Cumberland County is subject to periodic winter storms. The ice storm of 1998 was one of the most disruptive and damaging hazard events of recent history in Maine.
Wildfire	Review of Maine Forest Service records	Outside of the urbanized areas of the county, much of the land area is forested. The county has a recent history of experiencing numerous small wildfires.
Severe Summer Storms	Review of past disaster declarations Input from municipal staff	Cumberland County is subject to periodic severe summer storms. Summer storms have caused damage and injury from microbursts and tornado-like events in recent history.
Coastal Erosion	Input from municipal staff Review of Maine Geological Survey maps Review of "Living with the Coast of Maine"	Coastal communities have identified coastal erosion as an ongoing problem at specific locations. It is not, however, a widespread risk for communities.
Hurricanes	MEMA records State Planning Office, FPM National Weather Service NOAA website	Coastal communities are most at risk from hurricane events. Hurricanes can produce heavy rains, intense winds, storm surges resulting in flooding and coastal erosion.
Avalanche	Review of USGS maps	There are no mountains in the county with topographic and vegetative characteristics that result in avalanches.
Blight/Infestation	MEMA data Input from stakeholders	Data indicates that there is limited history of damage, injury or death resulting from blight and infestation in the county.
Drought	Review of NOAA records	Droughts have occurred in Cumberland County in the past. However, NOAA and state records indicate little significant economic impact from droughts within the County.
Earthquake	Review of MEMA and FEMA data.	Maine has a low but steady rate of earthquake occurrence. No significant amount of motion has been shown for any fault since the last Ice Age, about 20,000 years ago, and geologic evidence demonstrates that many faults have been inactive since the formation of the Appalachians, over 300,000,000 years ago. Most Maine earthquakes are of small magnitude and cause insignificant damage.

Hazard	How Identified	Description
Ground Subsidence	Review of Maine Geological Survey records	There have been no reported incidences of sudden land subsidence occurring in Cumberland County.
Landslide	Review of Maine Geological Survey Coastal Bluffs Maps And Coastal Landslide Hazards Maps	Although landslides do occur in the county, they are extremely localized and do not pose a widespread risk.

PROFILING HAZARD EVENTS

Requirement §201.6(c)(2)(i):	[The risk assessment shall include a] description of the …location and extent of all natural hazards that can affect the jurisdiction. The plan shall include information on previous occurrences of hazard events and on the probability of future hazard events.

HAZARD PROFILES

Following are more detailed descriptions of the high priority hazards in Cumberland County.

HAZARD – FLOODING

Flooding is defined as a temporary inundation of normally dry land as a result of: 1) the overflow of inland or tidal waters, 2) the unusual and rapid accumulation or runoff of surface waters from any source. The nature of Maine's geography, geology and hydrology is such that flooding is usually fast rising but short of duration.

Numerous types of floods have the potential to affect areas of Cumberland County. The flood types include: Coastal Flooding, Dam Failure/Breach, Flash Flood, Ice Jam, Lacustrine (Lake Flooding), Riverine/Riparian, and Urban. Floodplain boundaries (FIRM Maps) are currently being updated for portions of Cumberland County; however, recent publications of the new maps have come under scrutiny from local municipalities (e.g. Portland). Therefore, for the purposes of this update, existing graphics, tables and charts will be used to define the flooding hazard. It is anticipated that future updates of the plan will have the opportunity to access updated floodplain data.

The most likely locations for flooding within Cumberland County exist around its many rivers, streams and tributaries. The Saco River Basin is described as embracing most of Cumberland County. It includes small rivers like the Kennebec, Presumpscot and Royal. The County's largest city, Portland lies at the mouth of the Presumpscot River. Flooding can occur within the river and coastal areas of the County any time of year and is usually initiated and/or exacerbated by severe winter and summer storm events and snow melt.

Severe flooding in Cumberland County can cause loss of life, property damage, disruption of communications, transportation, electric service and community services, crop and livestock damage, health issues from contaminated water supplies, molds and mildew within structural components, and loss and interruption of business.

Generous precipitation (about 44-inches a year) contributes to the flood potential. The low pressure system over the seaboard and the tendency for some storms to follow one another in rapid succession provide heavy, combined moisture. The documented gradual sea rise coupled with wave action generated by winter storms, particularly nor'easters, have a profound effect on the nature of coastal flooding. Hurricanes occur far less frequently than winter storms, but can be just as, if not more, devastating than a winter storm.

Dam failure/breach also has adverse effects related to the nature of flooding within the County. Many dams through the County are now aged (over 100-years old), and beyond any reasonable design life. Maine law classifies the hazard potential of dams as high, significant or low. If they fail, high hazard dams could cause loss of life; significant hazard dams could cause significant property damage; and, low hazard dams generally cause damage only to the owner's property. In Cumberland County, there are four high hazard dams and five significant hazard dams, as shown in the following table**.** The high hazard dams are all regulated by Federal Emergency Regulatory Commission, while the significant hazard dams are regulated by MEMA. The nine high and significant hazard dams

all have Emergency Action Plans to mitigate the effects of failure. The County also has 53 low hazard dams that are not included in the table.

Residential Flooding in Westbrook – Feb. 26, 2010 Credit: John Patriquin/Portland Press Herald

CUMBERLAND COUNTY HIGH & SIGNIFICANT HAZARD DAMS					
MEMA ID	**DAM NAME**	**OTHER NAME**	**DAM OWNER**	**MUNICIPALITY**	**RIVER/LAKE**
High Hazard Dams					
417	Dundee Falls	Dundee Pond	SAPPI	Windham	Presumpscot
128	Eel Weir	Sebago Lake Dam	SAPPI	Windham	Presumpscot
123	Mallison Falls		SAPPI	Windham	Presumpscot
495	N. Gorham Hydro station		FPLE Energy Maine Hydro	Windham	Presumpscot
Significant Hazard Dams					
117	Highland Lake		Bill Morrisseau	Bridgton	Highland Lake
1007	Sanborn Pond		Daniel Sanborn	Baldwin	Pigeon
124	Highland Dam		Westbrook	Westbrook	Highland Lake
127	Little Sebago Lake	Hopkins Dam	Bruce Micucci	Windham	Little Sebago
122	Panther Pond	Raymond Dam	IFW	Raymond	Panther Pond

Source: Cumberland County Emergency Management Agency

Previous Flooding Occurrences. Cumberland County has many areas that are susceptible to coastal and riverine flooding. Twelve of its 28 towns are located directly on the Atlantic Ocean, and all others contain some amount of lakes, ponds, rivers, streams, or wetlands. The County's 2000 population of 265,000 represents almost a 10% increase over the 1990 population. Much of this population is located in the Greater Portland area, which is moderately to highly urbanized with high percentages of impervious area. Adding to the impact of population growth is the concentration of this growth in certain areas, particularly the edge communities around Portland. During the 1990's, Portland, South Portland and Westbrook, the three largest most populous municipalities in the county grew by less than 1%. However, edge communities such as Falmouth, Scarborough, North Yarmouth and Raymond had population growth rates of 30% or more. Stormwater runoff from this growth is regulated to a degree by the municipalities and the state DEP. However, this regulation is typically on a site-by-site basis and does not take into account watershed effects or incremental effects from developments that are too small to trigger regulation.

Cumberland County receives a fairly high level of precipitation at all seasons of the year. Severe widespread flooding occurs regularly in the spring and fall. Localized flooding occurs during the summer as a result of short high-intensity rainfall from thunderstorms.

Flooding has been the most common hazard affecting Cumberland County in the past. Between 1987 and 2010, there were twenty federally declared disasters in the County in which FEMA funds were utilized, seventeen of which were some type of flood event. Every municipality in the County received disaster assistance at least once, with the single exception of Frye Island. The average flood resulted in disaster assistance funding to fourteen municipalities.

The table below provides an historical summary of the flooding events affecting Cumberland County. Data source was MEMA – State of Maine Hazard Mitigation Plan. Where damages are provided they reflect the damage estimate reported for Cumberland County only.

No.	Date	Year	Declaration	County Damages
1	March 19	1936	n/a	
2	August 28	1946	n/a	
3	March 27 – 30	1953	n/a	
4	February 12	1972	n/a	$90,836
5	May 8	1975	SBA	
6	March 20	1977	SBA	
7	June	1984	n/a	
8	January	1986	n/a	
9	April 1	1987	FEMA-788-DR-ME	$45,757
10	March 27	1992	FEMA-940-DR-ME	$185,600
11	April	1993	FEMA-988-DR-ME	$13,220
12	April 16 -17	1996	FEMA-1114-DR-ME	$535,046
13	October 20 - 21	1996	FEMA-1143-DR-ME	$4,924,698
14	October 8 – 11	1998	FEMA-1263-DR-ME	$852,759
15	Dec. 17 – June 1	2003	FEMA-1468-DR-ME	$396,919
16	April 25	2007	FEMA-1693-DR-ME	$7,246,244
17	July 18 – Aug. 16	2008	FEMA-1788-DR-ME	$819,201
18	January 1	2009	FEMA-1815-DR-ME	$4,439,697
20	April 10	2010	FEMA-1891-DR-ME	$1,379,492

Probability of Occurrence. It can be expected that a major flood event will cause mostly road damage in Cumberland County at least once every decade. Floods are described in local flood studies in terms of their extent, including the horizontal area affected, and the related probability of occurrence. Flood studies use historical records to determine the probability of occurrence for different extents of flooding. The most widely adopted design and regulatory standard for floods in the US is the 1-percent annual chance flood and this is the standard formally

adopted by FEMA. The 1-percent annual flood, also known as the base flood, has a 1-percent chance of happening in any particular year. It is also referred to as the "100-year flood".

HAZARD – SEVERE WINTER STORMS

Severe winter weather conditions are distinguished by low temperatures, strong winds and often large quantities of snow. The types of winter storms in Maine are blizzards, ice storms, nor'easters, sleet and heavy snow storms.

The entire County is subject to severe storms every winter, but historically, northern and western portions of the County receive more snowfall while coastal areas are more likely to have freezing rain, sleet, tide surges and flood damage.

During the winter months, Cumberland County often has heavy snowfall, or snow combined with high winds, freezing rain or ice storms. Winter storm precipitation amounts can exceed several inches of water equivalent (20-30 inches of snow), while wind speeds can be equal to or greater than those of a hurricane. Total seasonal snowfall ranges between 50 and 90 inches. The snowfall season usually runs from November to April.

Loss of electrical power and communication services can occur when utility lines yield under the weight of ice and snow. These conditions can impede the response time of emergency services. The melting of snow pack in March and April is often gradual enough to prevent serious flooding, although there have been times when a quick melt has led to disastrous flood conditions.

Effects of Winter Storm in Portland Feb. 2010 Credit: Tim Greenway/Portland Press Herald

Previous Occurrences. The National Climate Data Center (a division of NOAA) collects and reports statistics on severe winter storms. The table below shows data from 1993 through the winter of 2010 for Cumberland County.

Type	Number of Events	% of total	Number of Deaths
Freezing rain	9	8.3%	2
Heavy snow	57	52.3%	0
Ice storm	3	3.7%	1
Light/moderate snow	23	21.1%	0
Winter storm	11	10.1%	0
Snow and ice	2	1.8%	0
Winter weather/mix	4	2.7%	0
TOTAL	109	100.00%	3

Source: National Climate Data Center

In addition, several statewide severe winter storms have occurred receiving Presidential Declarations.

Year	Month/Day	County Damage Estimate	Type of Event	Declaration
1972	March 7	$90,836	Ice Storm	Presidential
1993	March 13 - 14	$113,212	Blizzard	Presidential
1998	January 5 - 25	$5,775,274	Ice Storm	Presidential
2001	March 5 – 31	$1,075,641	Heavy Snow	Presidential
2003	January – March	$396,919	Winter Storm	Presidential
2008	December 11 – 29	$4,439,697	Winter Storm	Presidential
2010	March 25 – open	$1,379,492	Winter Storm	Presidential

During this 18-year period, Cumberland County experienced a total of 109 winter storms, an average of about six winter storms (as defined by NOAA) per year. Of these 109 storms, the majority were characterized as snowstorms, with 57 characterized as heavy snowstorms and 23 characterized as light or moderate snowstorms. Although relatively frequent, these storms do not typically result in significant property damage. Severe ice storms, although relatively infrequent, have caused substantial property damage, as illustrated by the two ice storms in March of 1972 and January of 1998 which caused $90,836 and $5,775,274 respectively in damages county wide.

The history of severe winter storms indicates that Cumberland County will continue to experience storms on a regular basis. On a more frequent basis, the County will experience winter snow storms on a yearly basis, which will not likely produce significant damage. Less frequently, the county will experience more damaging snow and ice storms.

HAZARD – WILDFIRE

Wildfire is a natural phenomenon initially finding its origin in lightning. However, humans have become the greatest cause of fires in Maine. Wildland fires are those that burn vegetable cover such as grass, brush and timber and Wildland urban interface fires are created where homes meet highly volatile forest fuels. Both of these types of wild fire occur in Cumberland County.

Previous Occurrences. The Maine Fire Service tracks all reported fire occurrences in the State on an annual basis. These are coded by cause: campfire, children, debris burning – which can include backyard burning as well as the agricultural practice of "burning over" blueberry fields, incendiary (includes arson), lightning, machinery, miscellaneous, railroad and smoking. The number of fires by cause for Cumberland County during the years 2000 – 2009 as reported by the Maine Forest Service is as follows: Camp – 16; Child – 51; Debris – 82; Arson – 17; Lightning – 12; Machinery – 51; Miscellaneous – 44; Railroad – 26; Smoking – 51; 10-Year Ave – 35; and, 10-Year Total – 350.

Despite containing a high percentage of heavily forested areas, Cumberland County has not experienced major wildfire events in recent years, with the last widespread wildfire occurring in 1947. This wildfire event caused multiple deaths and resulted in the burning of over 200,000 acres throughout the state of Maine, with the greatest impacts being in York County and on Mount Desert Island. Since the 1947 fire, the County experienced a major wildfire on May 3, 1951 and in October of 1961. As well, it is typical for the county to experience several minor wildfires per year. Between 1995 and 2009, the County experienced 730 separate minor wildfires. These fires were typically relatively small and quickly contained.

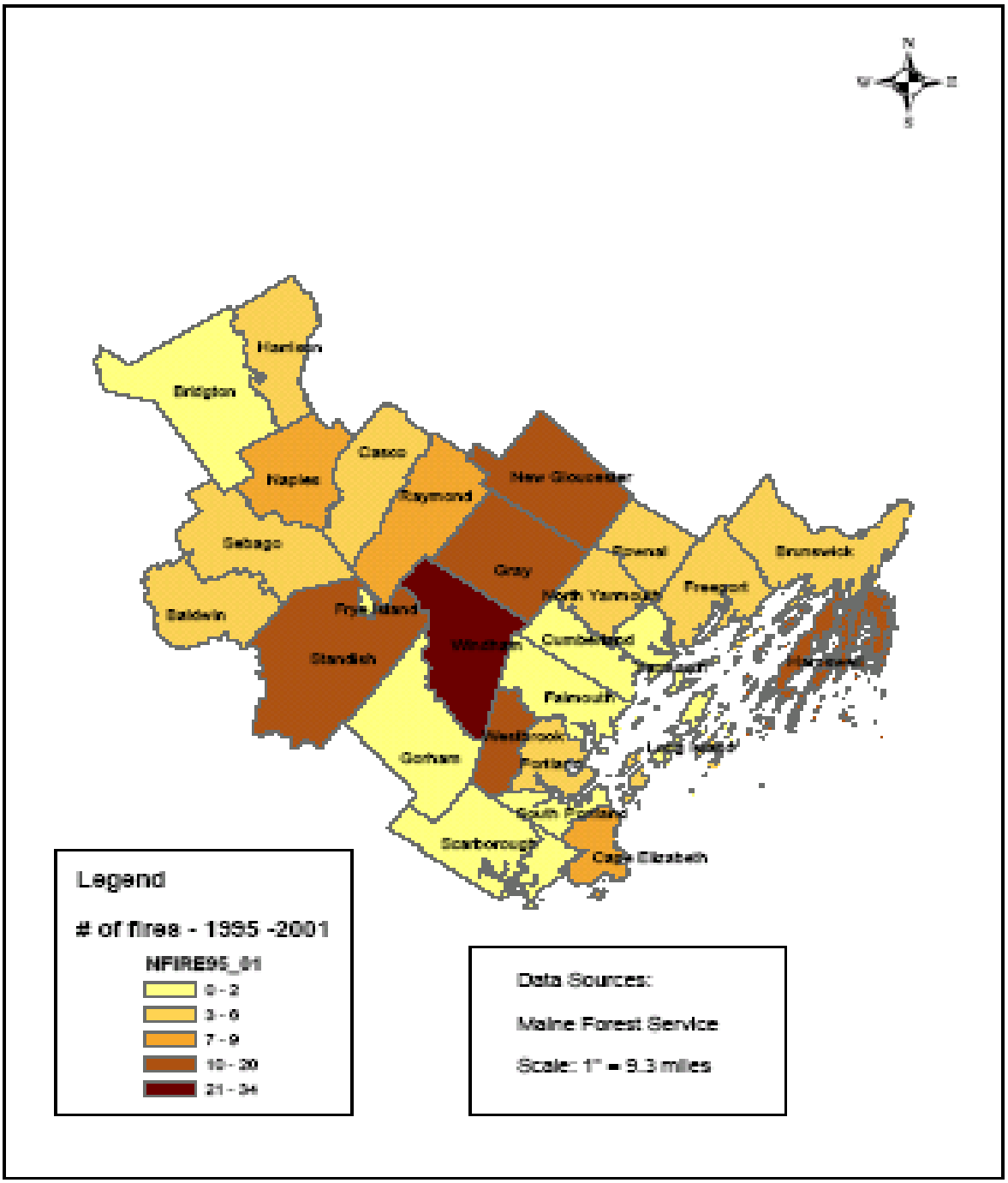
Frequency of Occurrence. The figure below displays summary data on number of wildfires by community for the period of 1995 – 2001. This map is based on data from the Maine Forest Service, which will be updating its wildfire data collection and reporting system over the next two to three years. At that time, a more accurate description of wildfire activity and risk will be available.

Historically, forest fires were one of the County's most significant hazards. Today, about 90% of all forest fires are caused by human activity while lightning causes about 10%. During dry periods, fire danger increases rapidly.

Probability of Occurrence. Based on historical record of forest fires, the Maine Forest Service Forest Protection Division anticipates that on a state level there will be between 600 – 700 low acreage fires (a low acreage fire is less than 500-acres) from all causes each year. However, using the last three decades of fire record, the probability of a major wildfire is once a decade. It would be reasonably accurate to extend this probability to Cumberland County. (Source: 2005 Biennial Report on the State of the Forest – Maine Forest Service.

CUMBERLAND COUNTY HAZARD MITIGATION

WILDFIRE EVENT HISTORY



HAZARD – SEVERE SUMMER STORMS

A severe summer storm is a violent weather phenomenon producing winds, heavy rains, lightning, and hail that can cause injuries, and destruction of property, crops and livestock. The types of summer weather events are hurricanes, lightning, thunderstorms, microbursts and tornadoes. Although included here as a type of summer weather event, hurricanes are discussed in their own section below.

The entire County is vulnerable to one or more severe summer storms each year, usually in the form of thunderstorms. The effects are usually more violent in the lesser populated northwestern portions of the County, while their effects tend to lessen along the more populated coastline communities where the cooling effects of the ocean tend to suppress thunderstorm conditions.

When severe summer storms arrive in the County, high winds can fell trees and branches onto power lines causing power and communication outages. Heavy rains that often accompany thunderstorms can result in flash flooding or erosion. Hail can cause crop damage for farmers and backyard gardeners. Lightning strikes can start fires. Any of these weather events can cause personal injury or property damage. The impact of these summer storms is usually restricted to flooding caused by large amounts of moisture these storms can carry.

The history of severe summer storms indicates that Cumberland County will continue to experience storms on a regular basis. On a more frequent basis, the County will experience summer thunderstorms, which will not likely produce significant damage. Less frequently, the County will experience more damaging storms. Although microbursts or even small tornado-like events may occur periodically, these events typically affect fairly small localized areas. According to MEMA and NOAA data, during the period of 1950 – 2007, there have been no documented F2 tornados. However, a F1 tornado was documented in Cumberland County in 2010. There are no probability studies available on summer storm occurrence. However, based on past experiences, the County can expect thunder and lightning every year, particularly in the summer months.

PRIORITIZATION OF HAZARDS

The preceding profiles describe the range of hazards for which Cumberland County is at risk. The history of hazard events in the County is the best indicator of future risks faced by the County. In order to prioritize future mitigation efforts, the range of hazard types was evaluated for frequency, impacts, and extent of affected population. The hazards were then ranked by order of priority, based on these criteria. Only the top four have been evaluated further. The prioritization matrix is shown below:

Hazard Type	Frequency	Impact	% of County at risk	Total Score
High Priority				
Flooding	4	4	4	12
Severe Winter Storm	4	4	4	12
Wildfire	3	2	4	9
Severe Summer Storm	3	2	4	9
Medium Priority				
Coastal Erosion	4	2	2	8
Hurricane	2	4	2	8
Low Priority				
Drought	1	2	4	7
Earthquake	1	2	4	7
Blight/infestation	1	2	3	6
Landslide	2	2	1	5
Avalanche	1	2	1	4
Ground subsidence	1	2	1	4

Frequency of events:

1- 10 years	=4
Greater than 10 years	=3
Greater than 50 years	=2
Greater than 100 years	=1

Impact:

Significant (multiple deaths, mass casualties, or millions of dollars in damages)	=4
Major (injuries, or 100,000's of dollars in damages)	=3
Moderate (injuries or 1,000's of dollars in damages)	=2
Minimal (no injuries or 100's of dollars in damages)	=1

% of County at risk:

All parts of county are vulnerable to hazard and might be impacted by an event	=4
All parts of county are vulnerable, but not all parts are likely to be impacted by an event	=3
Vulnerability and impacts are limited to certain regions of the county	=2
Vulnerability and impacts are localized	=1

ASSESSING VULNERABILITY: OVERVIEW

Requirement §201.6(c)(2)(ii):	The risk assessment shall include a description of the jurisdiction's vulnerability to the hazards described in paragraph (c)(2)(i) of this section. This description shall include an overall summary of each hazard and its impact on the community.

The hazard mitigation planning team identified critical facilities located within each municipality, using GIS data from the Maine Office of GIS. Critical facilities are defined by FEMA as "facilities that are critical to the health and welfare of the population and that are especially important following hazard events". Critical facilities include, but are not limited to, shelters, police and fires stations, and hospitals. The critical facilities identified in Cumberland County are: municipal offices, fire stations, police stations, water treatment facilities, wastewater treatment plants, libraries, schools, shelters, hospitals, airports, dams, rescue units, armories, roads, electric lines, and telephone lines.

The four highest priority hazards identified for Cumberland County are flooding, severe winter storms, wildfires and severe summer storms. The following describes the vulnerability of critical facilities to each of these hazards:

Flooding: The typical damage resulting from flooding in Cumberland County is structural damage to roads and utility infrastructure. There may be other types of critical facilities that are susceptible to damage from flooding, but insufficient data was available to determine these facilities. Mitigation measures in the future might include a more comprehensive field analysis of vulnerability. However, due to the varied topography within the county and the availability of higher elevation sites within all municipalities, nearly all critical facility structures are located outside of the flood zones, with the possible exception of some wastewater treatment plants, due to the need to locate these at lower elevations.

Severe Winter Storms: Winter storms damage overhead utility lines, cause flooding (ice jams and spring melt off) and dump debris and large amounts of snow on the roads. The County is also susceptible to ice storms which can affect the same infrastructure. The more wide-spread events, such as blizzards and ice storms will typically impact the county through severe damage to overhead electric and utility line infrastructure and blockage of roads by debris. When accompanied by flooding, the impacts will be as described above.

Wildfire: The combination of a high degree of development within a County which is still primarily heavily-forested creates the potential for significant damage to critical facilities, homes and commercial property in Cumberland County resulting from wildfires.

Severe Summer Storms: Localized events, such as microbursts or small tornados have the potential to cause significant damage to structures, should they happen to occur in direct proximity to a critical structure. The more

wide-spread events, such as hurricanes and tornados will typically impact the County through severe damage to overhead electric and utility line infrastructure and blockage of roads by debris. When accompanied by flooding, the impacts will be as described above.

ASSESSING VULNERABILITY: ADDRESSING REPETITIVE LOSS PROPERTIES

Requirement §201.6(c)(2)(ii):	The risk assessment must address National Flood Insurance Program (NFIP) insured structures that have been repetitively damaged by floods.

Repetitive Loss Properties. Based on November 30, 2010 information from the State Planning Office there were 24 repetitive loss properties located in Cumberland County. Due to privacy laws, the plan only identifies the Town and the number of repetitive losses suffered within each Town. The properties were all single or multi-family residential properties except for the three properties in Westbrook which were non-residential, commercial properties. The Towns and number of properties in each Town which reported repetitive losses include the following:

Cape Elizabeth – 3 residential losses
Casco – 6 residential losses
Falmouth – 2 residential losses
Gray – 3 residential losses
Harrison – 2 residential losses
Scarborough – 5 residential losses
Westbrook – 3 commercial losses

ASSESSING VULNERABILITY: IDENTIFYING STRUCTURES

Requirement §201.6(c)(2)(ii)(A):	The plan should describe vulnerability in terms of the types and numbers of existing and future buildings, infrastructure and critical facilities located in the hazard area.

The following table lists the type and numbers of critical facilities in each municipality in Cumberland County.

Municipality	Municipal Office	Fire Station	Police Station	Water Treatment	WWTP – Major	WWTP – Minor	Library	Schools	Shelters	Hospital/ Clinic	Airport/ Seaport	Dams	Rescue	Armory
Baldwin	1	3	0	0	0	0	1	2	1	0	0	1	0	0
Bridgton	1	4	1	1	0	1	2	3	1	1	1	5	1	0
Brunswick	1	2	1	1	1	4	2	8	5	2	2	1	2	0
Cape Elizabeth	1	2	1	0	0	1	1	5	2	0	1	0	1	0
Casco	1	2	0	0	0	0	1	2	2	0	0	0	2	0
Chebeague Island	1	1	0	0	0	0	1	1	1	0	0	0	1	0
Cumberland	1	2	1	0	0	0	2	5	1	0	0	1	3	0
Falmouth	1	4	1	0	1	1	1	5	3	0	1	1	2	0
Freeport	1	1	1	0	1	0	1	5	2	0	0	0	1	0
Frye Island	1	1	0	0	0	0	0	0	1	0	0	0	0	0
Gorham	1	3	1	0	0	2	4	5	0	0	1	0	2	0
Gray	1	3	0	0	0	0	1	3	2	0	0	1	1	0
Harpswell	1	3	0	0	0	1	1	2	2	0	1	0	3	0
Harrison	1	1	0	0	0	0	2	1	1	0	1	1	0	0
Long Island	1	1	0	0	0	0	1	1	2	0	0	0	1	0
Naples	1	1	0	0	0	0	1	4	3	0	0	2	2	0
New Gloucester	1	1	0	0	0	0	1	3	1	0	1	4	1	0
North Yarmouth	1	1	0	1	0	0	0	1	1	0	1	0	1	0
Portland	1	8	6	1	1	5	5	34	5	3	1	0	3	1
Pownal	1	1	0	0	0	0	0	1	1	0	1	1	0	0
Raymond	1	3	0	0	0	0	1	3	1	0	0	1	3	0
Scarborough	1	6	1	1	1	1	1	8	1	0	0	0	2	0
Sebago	1	3	0	0	0	0	1	1	2	0	0	4	1	0
South Portland	1	6	1	0	1	9	2	13	7	0	0	0	2	0

Municipality	Municipal Office	Fire Station	Police Station	Water Treatment	WWTP – Major	WWTP – Minor	Library	Schools	Shelters	Hospital/ Clinic	Airport/ Seaport	Dams	Rescue	Armory
Standish	1	3	0	0	1	0	2	4	2	0	0	1	2	0
Westbrook	1	2	1	0	1	0	2	9	2	1	1	3	2	1
Windham	1	4	1	0	3	0	1	4	4	1	1	1	2	0
Yarmouth	1	4	1	0	1	0	1	5	2	0	0	2	2	0
TOTAL	28	76	18	5	12	26	39	138	60	8	14	30	43	2

Source: Cumberland County Emergency Management Agency

Vulnerability of existing buildings, infrastructure and critical facilities.

Flooding:

- Buildings. There are very few buildings in Cumberland County that are vulnerable to flood damages. Most of the developed areas in the County are located outside of designated floodplains and are thus not very vulnerable to flooding.
- Infrastructure. Roads and their associated storm drainage systems are the most vulnerable category of infrastructure. Some of the County is rural in nature and is serviced by a network of rural roads that do not have proper storm drainage systems. These roads are very vulnerable to flooding caused by heavy downpours and/or the blockage of drainage systems by ice or debris.
- Critical facilities. Due to varied topography within the County and the availability of higher elevation sites within all municipalities, nearly all critical facilities are located outside of floodplains.

Severe winter storms:

- Buildings. All buildings in Cumberland County are vulnerable to winter storm damage. Damages can include burst water pipes during power outages, interior water damages due to ice dams forming on roofs and occasionally roof collapses due to heavy loads.
- Infrastructure. Roads and their associated storm drainage systems are the most vulnerable category of infrastructure. They can become temporarily blocked due to heavy snow falling over a short period of time or ice which can build up on their surfaces. Water main breaks due to cold weather can also occur. Roads and their storm drainage systems can become blocked due to heavy snow and ice and debris such as tree limbs.
- Critical facilities. All critical facilities in Cumberland County are vulnerable to winter storms in the same manner that individual buildings are vulnerable. However, some of the critical facilities throughout the County have back-up generator systems which allow heating systems to continue during a power outage.

Wildfires:

- Buildings. Almost all buildings within Cumberland County are vulnerable to wildfire damages. Most of the rural areas are heavily forested and thus are very vulnerable to fire.
- Infrastructure. Roads and their associated storm drainage systems are the least vulnerable category of infrastructure. Although during wildfire events roads may become closed, it would be expected that once the fire is under control, the road could reopen without experiencing heavy damages.
- Critical facilities. All critical facilities in Cumberland County are vulnerable to wildfires in the same manner that individual buildings are vulnerable.

Severe summer storms:

- Buildings. There are very few buildings in Cumberland County that are vulnerable to summer storms and associated flooding. With the exception of some areas in the outlying towns, most of the developed areas in the County are located outside of designated floodplains and are thus not very vulnerable to flooding.

- Infrastructure. Roads and their associated storm drainage systems are the most vulnerable category of infrastructure. They can become flooded over a short period of time. Roads and their storm drainage systems can become blocked due to debris such as tree limbs.
- Critical facilities. Due to varied topography within the County and the availability of higher elevation sites within all municipalities, nearly all critical facilities are located outside of floodplains.

Vulnerability of future buildings, infrastructure and critical facilities.

Flooding:

- Buildings. All of the municipalities in Cumberland County are in the flood insurance program, and all have municipal Shoreland zoning ordinances that generally prohibit the construction of residential, commercial and industrial structures in floodplains. Therefore, flooding of future buildings is not likely to be a serious issue.
- Infrastructure. Future roads and their associated storm drainage systems are the most vulnerable category of infrastructure. However, State and local road construction standards generally ensure that new roads are properly constructed with adequate drainage systems. Most roads (with the exception of some camp roads) in the public domain must be designed by a licensed professional engineer. Therefore, flooding of future roads is not likely a serious issue.
- Critical facilities. Conditions for future critical facilities would be the same as those described above for buildings.

Severe winter storms:

- Buildings. New buildings in Cumberland County are less vulnerable to winter storm damage. Damages can include burst water pipes during power outages, interior water damages due to ice dams forming on roofs and occasionally roof collapses due to heavy loads; however, with current building codes residing over new construction water damage and failure from snow load will be limited.
- Infrastructure. Roads and their associated storm drainage systems will continue to be the most vulnerable category of infrastructure. They can become temporarily blocked due to heavy snow falling over a short period of time or ice which can build up on their surfaces. Water main breaks due to cold weather can also occur. Roads and their storm drainage systems can become blocked due to heavy snow and ice and debris such as tree limbs.
- Critical facilities. Future critical facilities in Cumberland County are vulnerable to winter storms in the same manner that individual buildings are vulnerable. However, some of them will have back-up generator systems which allow heating systems to continue during a power outage.

Wildfires:

- Buildings. New buildings within Cumberland County will be vulnerable to wildfire damages in the same manner as existing buildings. With the exception of some areas in the metropolitan areas, most of the rural areas are heavily forested and thus are very vulnerable to fire.
- Infrastructure. New roads and their associated storm drainage systems are the least vulnerable category of infrastructure. Although during wildfire events roads may become closed, it would be expected that once the fire is under control, the road could reopen without experiencing heavy damages.
- Critical facilities. All future critical facilities in Cumberland County are vulnerable to wildfires in the same manner that individual buildings are vulnerable.

Severe summer storms:

- Future buildings in Cumberland County will be vulnerable to summer storms and associated flooding in the same manner as existing buildings. With the exception of some areas in the outlying towns, most of the future development within the County will be located outside of designated floodplains and are thus not very vulnerable to flooding.
- Infrastructure. New roads and their associated storm drainage systems are the most vulnerable category of infrastructure. However, State and local road construction standards generally ensure that new roads are

properly constructed with adequate drainage systems. Most roads (with the exception of some camp roads) in the public domain must be designed by a licensed professional engineer. Therefore, flooding of future roads is not likely a serious issue.

- Critical facilities. Future critical facilities in Cumberland County are vulnerable to summer storms in the same manner that individual buildings are vulnerable. However, some of them will have back-up generator systems which allow heating systems to continue during a power outage.

ASSESSING VULNERABILITY: ESTIMATING POTENTIAL LOSSES

Requirement §201.6(c)(2)(ii)(B):	The plan should describe vulnerability in terms of an estimate of the potential dollar losses to vulnerable structures identified in paragraph (c)(2)(i)(A) of this section and a description of the methodology used to prepare the estimate…

The planning team estimated losses to roads and structures resulting from the three highest priority hazards; flooding, severe summer and winter storms (included together since their potential damages are similar) and wildfire. These estimates were based on data from the Maine Office of GIS, Maine Department of Transportation, and Maine Forest Service. The results of this analysis are found on the following pages. The methodologies are described at the beginning of each hazard section.

Severe Winter & Summer Storms - Ice and Wind: The principal potential damages resulting from severe storms, ice and wind are to utility infrastructure and roadways. The loss estimates are based on a cost of $577.50/mile to clear road debris or remove snow, a cost of $2,309.98 to repair or replace telephone lines, and a cost of $36,959.75 to repair or replace electric lines. The worst case scenario of total loss of all utility poles and lines was utilized. The cost figures were supplied by Central Maine Power and Fairpoint Communications. The loss estimates reflect 2010 dollars.

Municipality	Critical Facility	Type	Length (miles)	Loss Estimate
Baldwin	Electrical Power Lines	Electricity	58.88	$2,176,190
	Telephone Lines	Communications	58.88	$136,012
	Paved Road Surfaces	Transportation	43.13	$24,908
	Gravel Road Surfaces	Transportation	15.75	$9,096
Bridgton	Electrical Power Lines	Electricity	107.45	$3,971,325
	Telephone Lines	Communications	107.45	$248,207
	Paved Road Surfaces	Transportation	91.17	$52,651
	Gravel Road Surfaces	Transportation	16.28	$9,402
Brunswick	Electrical Power Lines	Electricity	168.57	$6,230,305
	Telephone Lines	Communications	168.57	$389,393
	Paved Road Surfaces	Transportation	163.24	$94,271
	Gravel Road Surfaces	Transportation	5.33	$3,078
Cape Elizabeth	Electrical Power Lines	Electricity	60.49	$2,235,695
	Telephone Lines	Communications	60.49	$139,731
	Paved Road Surfaces	Transportation	60.35	$34,852
	Gravel Road Surfaces	Transportation	0.14	$81
Casco	Electrical Power Lines	Electricity	70.36	$2,600,488
	Telephone Lines	Communications	70.36	$162,530
	Paved Road Surfaces	Transportation	47.76	$27,581
	Gravel Road Surfaces	Transportation	22.6	$13,052

Municipality	Critical Facility	Type	Length (miles)	Loss Estimate
Chebeague Island	Electrical Power Lines	Electricity	15.0	$554,396
	Telephone Lines	Communications	15.0	$34,650
	Paved Road Surfaces	Transportation	12.0	$6,930
	Gravel Road Surfaces	Transportation	3.0	$1,733
Cumberland	Electrical Power Lines	Electricity	99.69	$3,684,517
	Telephone Lines	Communications	99.69	$230,282
	Paved Road Surfaces	Transportation	84.19	$48,620
	Gravel Road Surfaces	Transportation	15.5	$8,951
Falmouth	Electrical Power Lines	Electricity	114.69	$4,238,914
	Telephone Lines	Communications	114.69	$264,932
	Paved Road Surfaces	Transportation	114.52	$66,135
	Gravel Road Surfaces	Transportation	0.17	$98
Freeport	Electrical Power Lines	Electricity	108.28	$4,002,002
	Telephone Lines	Communications	108.28	$250,125
	Paved Road Surfaces	Transportation	99.76	$57,611
	Gravel Road Surfaces	Transportation	8.52	$4,920
Frye Island	Electrical Power Lines	Electricity	18.66	$689,669
	Telephone Lines	Communications	18.66	$43,104
	Paved Road Surfaces	Transportation	0	$0
	Gravel Road Surfaces	Transportation	18.66	$10,776
Gorham	Electrical Power Lines	Electricity	147.57	$5,454,150
	Telephone Lines	Communications	147.57	$340,884
	Paved Road Surfaces	Transportation	139.67	$80,659
	Gravel Road Surfaces	Transportation	7.9	$4,562
Gray	Electrical Power Lines	Electricity	110.34	$4,078,139
	Telephone Lines	Communications	110.34	$254,883
	Paved Road Surfaces	Transportation	85.81	$49,555
	Gravel Road Surfaces	Transportation	24.53	$14,166
Harpswell	Electrical Power Lines	Electricity	58.32	$2,155,493
	Telephone Lines	Communications	58.32	$134,718
	Paved Road Surfaces	Transportation	55.63	$32,126
	Gravel Road Surfaces	Transportation	2.69	$1,553
Harrison	Electrical Power Lines	Electricity	65.46	$2,419,385
	Telephone Lines	Communications	65.46	$151,211
	Paved Road Surfaces	Transportation	47.88	$27,651
	Gravel Road Surfaces	Transportation	17.58	$10,152

Municipality	Critical Facility	Type	Length (miles)	Loss Estimate
Long Island	Electrical Power Lines	Electricity	8.64	$319,332
	Telephone Lines	Communications	8.64	$19,958
	Paved Road Surfaces	Transportation	5.54	$3,199
	Gravel Road Surfaces	Transportation	3.1	$1,790
Naples	Electrical Power Lines	Electricity	59.35	$2,193,561
	Telephone Lines	Communications	59.35	$137,097
	Paved Road Surfaces	Transportation	45.26	$26,138
	Gravel Road Surfaces	Transportation	14.09	$8,137
New Gloucester	Electrical Power Lines	Electricity	100.86	$3,727,760
	Telephone Lines	Communications	100.86	$232,985
	Paved Road Surfaces	Transportation	67.22	$38,820
	Gravel Road Surfaces	Transportation	33.64	$19,427
North Yarmouth	Electrical Power Lines	Electricity	40.55	$1,498,718
	Telephone Lines	Communications	40.55	$93,670
	Paved Road Surfaces	Transportation	34.15	$19,722
	Gravel Road Surfaces	Transportation	6.4	$3,696
Portland	Electrical Power Lines	Electricity	263.46	$9,737,416
	Telephone Lines	Communications	263.46	$608,587
	Paved Road Surfaces	Transportation	244.5	$141,199
	Gravel Road Surfaces	Transportation	18.96	$10,949
Pownal	Electrical Power Lines	Electricity	45.36	$1,676,494
	Telephone Lines	Communications	45.36	$104,781
	Paved Road Surfaces	Transportation	29.53	$17,054
	Gravel Road Surfaces	Transportation	15.83	$9,142
Raymond	Electrical Power Lines	Electricity	53.23	$1,967,367
	Telephone Lines	Communications	53.23	$122,960
	Paved Road Surfaces	Transportation	51.99	$30,024
	Gravel Road Surfaces	Transportation	1.24	$716
Scarborough	Electrical Power Lines	Electricity	155.53	$5,748,350
	Telephone Lines	Communications	155.53	$359,271
	Paved Road Surfaces	Transportation	153.29	$88,525
	Gravel Road Surfaces	Transportation	2.24	$1,294
Sebago	Electrical Power Lines	Electricity	8.64	$319,332
	Telephone Lines	Communications	8.64	$19,958
	Paved Road Surfaces	Transportation	39.65	$22,898
	Gravel Road Surfaces	Transportation	17.37	$10,031

Municipality	Critical Facility	Type	Length (miles)	Loss Estimate
South Portland	Electrical Power Lines	Electricity	136.18	$5,033,179
	Telephone Lines	Communications	136.18	$314,573
	Paved Road Surfaces	Transportation	135.52	$78,263
	Gravel Road Surfaces	Transportation	0.66	$381
Standish	Electrical Power Lines	Electricity	135.43	$5,005,459
	Telephone Lines	Communications	135.43	$312,841
	Paved Road Surfaces	Transportation	111.91	$64,628
	Gravel Road Surfaces	Transportation	23.52	$13,583
Westbrook	Electrical Power Lines	Electricity	84.1	$3,108,315
	Telephone Lines	Communications	84.1	$194,269
	Paved Road Surfaces	Transportation	83.43	$48,181
	Gravel Road Surfaces	Transportation	0.67	$387
Windham	Electrical Power Lines	Electricity	144.51	$5,341,053
	Telephone Lines	Communications	144.51	$333,815
	Paved Road Surfaces	Transportation	114.39	$66,060
	Gravel Road Surfaces	Transportation	30.12	$17,394
Yarmouth	Electrical Power Lines	Electricity	73.33	$2,710,258
	Telephone Lines	Communications	73.33	$169,391
	Paved Road Surfaces	Transportation	72.35	$41,782
	Gravel Road Surfaces	Transportation	0.98	$566

Flooding: In order to estimate potential losses from flooding, all roads lying within the 100-year floodplain were identified and costs to replace these roads were calculated. For municipalities for which data was available indicating whether the road was paved or gravel, cost estimates of $288,748.01 and $150,148.97 per mile respectively were used as replacement costs. For municipalities for which no data was available for road surface, an estimate of $230,998.41 per mile was used. A summary of potential losses is shown below.

Municipality	Road	Length (feet)	Damage Cost
Baldwin	TOTAL	4,656	$204,473
Bridgton	TOTAL	12,599	$553,298
Brunswick	TOTAL	3,196	$175,445
Cape Elizabeth	TOTAL	2,846	$124,985
Casco	TOTAL	8,675	$380,972
Chebeague Island	TOTAL	890	$39,085
Cumberland	TOTAL	2,179	$95,693
Falmouth	TOTAL	3,637	$199,653
Freeport	TOTAL	1,518	$83,331

Municipality	Road	Length (feet)	Damage Cost
Frye Island	TOTAL	1,344	$38,365
Gorham	TOTAL	5,483	$300,990
Gray	TOTAL	8,168	$358,706
Harpswell	TOTAL	81,643	$3,585,438
Harrison	TOTAL	2,976	$130,694
Long Island	TOTAL	1,284	$56,388
Naples	TOTAL	11,103	$487,600
New Gloucester	TOTAL	4,472	$196,393
North Yarmouth	TOTAL	1,388	$60,955
Portland	TOTAL	9,715	$533,305
Pownal	TOTAL	1,524	$66,928
Raymond	TOTAL	4,684	$205,703
Scarborough	TOTAL	12,033	$660,552
Sebago	TOTAL	5,769	$253,352
South Portland	TOTAL	1,196	$65,654
Standish	TOTAL	18,740	$822,987
Westbrook	TOTAL	4,080	$179,177
Windham	TOTAL	16,728	$734,628
Yarmouth	TOTAL	2,869	$157,494

Wildfire: The damage losses that are expected due to wildfire in Cumberland County are damage and/or destruction of structures within the wildland-urban interface. The damage cost estimates are based on total municipal assessment figures, adjusted for community size (fire-fighting capacity), fire hazard land cover values (from Maine Forest Service) and number of fires during the period of 1998 to 2005 (from Maine Forest Service).

Municipality	# of fires in 7 years	# of fires - %	Community size	Community size - %	Land cover - %	Total % rating	Damage cost
Baldwin	4	5%	Rural	25%	10%	40%	$ 15,833,822
Bridgton	2	5%	Rural	25%	10%	40%	$ 102,711,045
Brunswick	4	5%	Suburban	15%	10%	30%	$ 251,303,082
Cape Elizabeth	9	5%	Suburban	15%	10%	30%	$ 160,328,241
Casco	4	5%	Rural	25%	10%	40%	$ 50,979,520
Cumberland	0	5%	Suburban	15%	10%	30%	$ 122,721,150
Falmouth	0	5%	Suburban	15%	10%	30%	$ 199,726,680
Freeport	4	5%	Suburban	15%	10%	30%	$ 145,264,350
Frye Island	0	5%	Rural	25%	10%	40%	$ 12,637,733
Gorham	1	5%	Suburban	15%	10%	30%	$ 128,955,930
Gray	12	15%	Suburban	15%	10%	40%	$ 112,100,319
Harpswell	12	15%	Rural	25%	10%	50%	$ 160,927,437
Harrison	4	5%	Rural	25%	10%	40%	$ 45,558,622

Municipality	# of fires in 7 years	# of fires - %	Community size	Community size - %	Land cover - %	Total % rating	Damage cost
Long Island	1	5%	Rural	25%	10%	40%	$ 7,909,504
Naples	8	5%	Rural	25%	10%	40%	$ 79,865,687
New Gloucester	20	25%	Rural	25%	10%	60%	$ 93,025,175
No. Yarmouth	6	5%	Rural	25%	10%	40%	$ 57,389,756
Portland	4	5%	Urban	5%	10%	20%	$ 582,217,115
Pownal	4	5%	Rural	25%	10%	40%	$ 36,112,240
Raymond	8	5%	Rural	25%	10%	40%	$ 87,952,801
Scarborough	0	5%	Suburban	15%	10%	30%	$ 271,598,160
Sebago	4	5%	Rural	25%	10%	40%	$ 36,283,821
South Portland	0	5%	Urban	5%	10%	20%	$ 251,756,120
Standish	12	15%	Rural	25%	10%	50%	$ 171,041,501
Westbrook	15	15%	Suburban	15%	10%	30%	$ 171,853,560
Windham	34	35%	Suburban	15%	10%	60%	$ 368,223,979
Yarmouth	1	5%	Suburban	15%	10%	30%	$ 236,515,955
TOTAL							$ 3,960,793,305

ASSESSING VULNERABILITY: ANALYZING DEVELOPMENT TRENDS

Requirement §201.6(c)(2)(ii)(C):	The plan should describe vulnerability in terms of providing a general description of land uses and development trends within the community so that mitigation options can be considered in future land uses decisions.

Cumberland County is Maine's most populous County. Land use within the County ranges from densely populated urbanized areas to suburban residential areas to farm and forestland. The County contains Portland which is Maine's most populous city. All of the communities in the County have enacted comprehensive plans, in compliance with Maine statute. All communities are participants in the NFIP program and all communities have floodplain ordinances to regulate development within flood zones. All communities except four have enacted zoning ordinances.

Overall population growth in the County between 1990 and 2000 was almost 10%. However, some communities experienced growth rates of up to 35% or during this period, while other communities experienced practically no growth at all. It is worth noting that no communities in the County experienced negative growth. A clear trend in the county is that nearly all of the residential growth is occurring in the suburban and rural communities, while nearly no residential growth is occurring in the major cities. The County's four most populous communities, Portland, South Portland, Brunswick and Westbrook, had growth rates of 0.0%. 0.7%, 1.3% and 0.1% respectively during this period. Seventeen communities had growth rates over 12% and four communities had growth rates over 25%.

Town	Population 1990	Population 2000	Net Change, 1990-2000	Growth Rate, 1990-2000
Scarborough	12,518	16,970	4,452	35.6%
Falmouth	7,610	10,310	2,700	35.5%
North Yarmouth	2,429	3,210	781	32.2%
Raymond	3,311	4,299	988	29.8%
Cumberland	5,836	7,159	1,323	22.7%
New Gloucester	3,916	4,803	887	22.7%
Standish	7,678	9,285	1,607	20.9%
Gorham	11,856	14,141	2,285	19.3%

Town	Population 1990	Population 2000	Net Change, 1990-2000	Growth Rate, 1990-2000
Harrison	1,951	2,315	364	18.7%
Pownal	1,262	1,491	229	18.1%
Gray	5,904	6,820	916	15.5%
Casco	3,018	3,469	451	14.9%
Naples	2,860	3,274	414	14.5%
Windham	13,020	14,904	1,884	14.5%
Sebago	1,259	1,433	174	13.8%
Bridgton	4,307	4,883	576	13.4%
Chebeague Island	298	325	27	8.3%
Freeport	6,905	7,800	895	13.0%
Yarmouth	7,862	8,360	498	6.3%
Baldwin	1,219	1,290	71	5.8%
Harpswell	5,012	5,239	227	4.5%
Cape Elizabeth	8,854	9,068	214	2.4%
Brunswick	20,906	21,172	266	1.3%
South Portland	23,163	23,324	161	0.7%
Long Island	201	202	1	0.5%
Westbrook	16,121	16,142	21	0.1%
Frye Island	0	0	0	0.0%
Portland	64,157	64,249	92	0.0%
TOTAL	243,135	265,612	22,477	9.2%

As can be seen from the population dynamics presented above, development trends are tending to spread to the suburban towns. As the populations of these towns grow, so too does the demand for land that encroaches on historically forested and riparian areas. New population growth in these areas may contribute to hazard affects particularly when buffers between human activities and wild lands are not protected. This has placed a burden on the suburban towns as they deal with urban interface fire issues and expansion of infrastructure into these more remote areas.

Mitigation options used for future land use decisions are being incorporated into municipality development and community planning goals. Regional cooperation is required in order to analyze land use practices which may exacerbate hazards and to implement strategies to deal with the changing demographics. At the community level, land use planning goals include ensuring the efficient allocation and management of resources and protection of the environment through compliance with federal, state and local laws and regulations.

MULTI-JURISDICTIONAL RISK ASSESSMENT

Requirement §201.6(c)(2)(iii):	For multi-jurisdictional plans, the risk assessment section must assess each jurisdiction's risks where they vary from the risks facing the entire planning area.

The following are hazards for which all areas of the County are subject to the same general risk:

- Severe winter storms
- Severe summer storms
- Riverine Flooding
- Wildfires (with some limited variance among the communities, particularly a lower degree of risk within the immediate Greater Portland area).
- Earthquake

The following hazards primarily affect the coastal communities of Scarborough, Cape Elizabeth, South Portland, Portland, Falmouth, Cumberland, Yarmouth, Freeport, Brunswick, Long Island, Chebeague Island, and Harpswell:

- Coastal flooding
- Coastal erosion
- Landslides/erosion

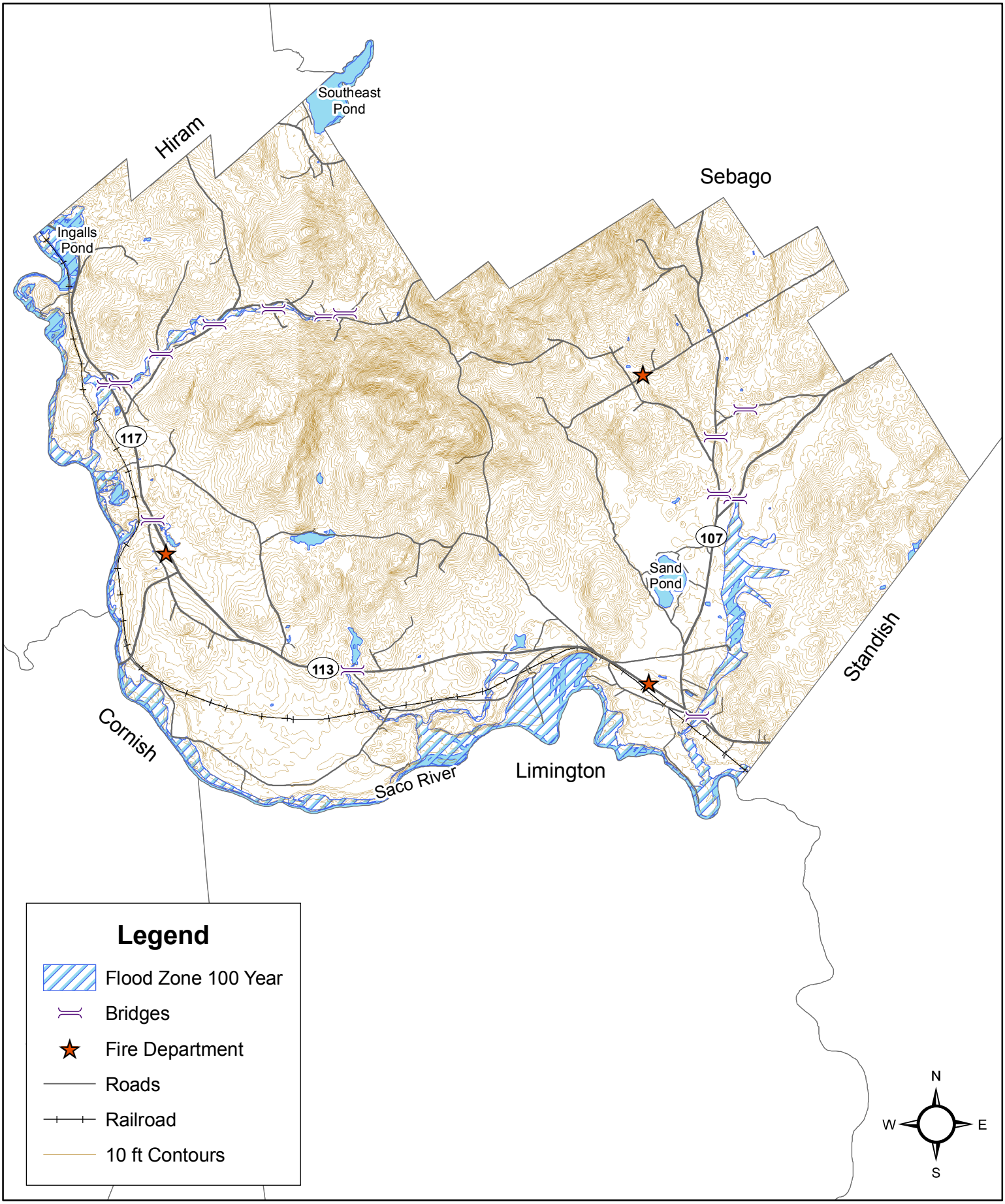
Drought poses a varying risk to the communities within the County. The greatest variance in impact is determined by the nature of the water supply for the community. Those communities which are served by the Portland Water District, which utilizes Sebago Lake as its primary water source, are at a fairly low degree of risk to drinking water quantity and quality resulting from drought. Other communities which utilize groundwater wells or surface river or lake supplies are at a higher degree of risk. Those communities which have a high percentage of the population on private wells are at the greatest degree of risk.

COUNTY BASE MAPS

Following are base maps of the 28 cities and towns in Cumberland County. Data was obtained from the Maine Office of GIS, Maine DEP, Maine Geological Survey, Maine Department of Transportation and the individual municipalities. Each figure shows the municipal boundary, topographic relief, floodplains, critical facilities and principal roads.

The primary flood analysis data used was the FEMA FIRM flood zone areas. The Army Corps of Engineers SLOSH data for Cumberland County was obtained and examined for storm surge inundation areas. These areas appeared to follow roughly with the FEMA FIRM data.

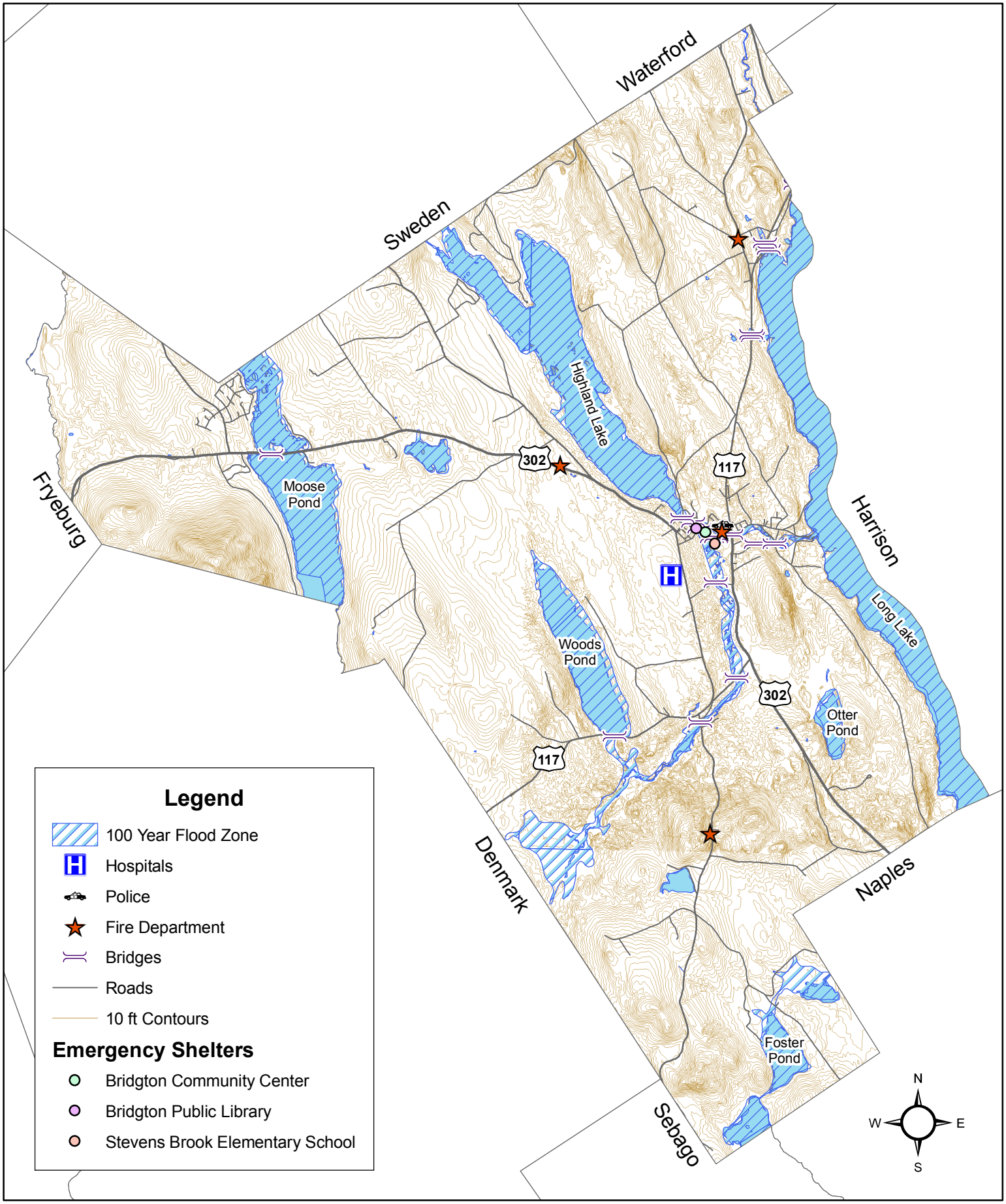
Although not made part of this updated plan, CCEMA is in the process of updating base maps that will be provided to the staff of each city and town in Cumberland County as a tool to assist them in determining areas vulnerable to hazards and facilities that would be damaged or impacted by hazard events. A particular focus was placed on flooding. The municipality's mitigation project sites will all be identified on the maps, as well as, their critical facilities. The maps that will be provided to the municipalities will be large-format, typically 30" x 40". Each municipality will also receive a computer disk with all GIS data so that municipalities with GIS capability can do their own data management and mapping in the future.



Cumberland County Hazard Mitigation Plan: Town of Baldwin

0 0.5 1 2 3 Miles

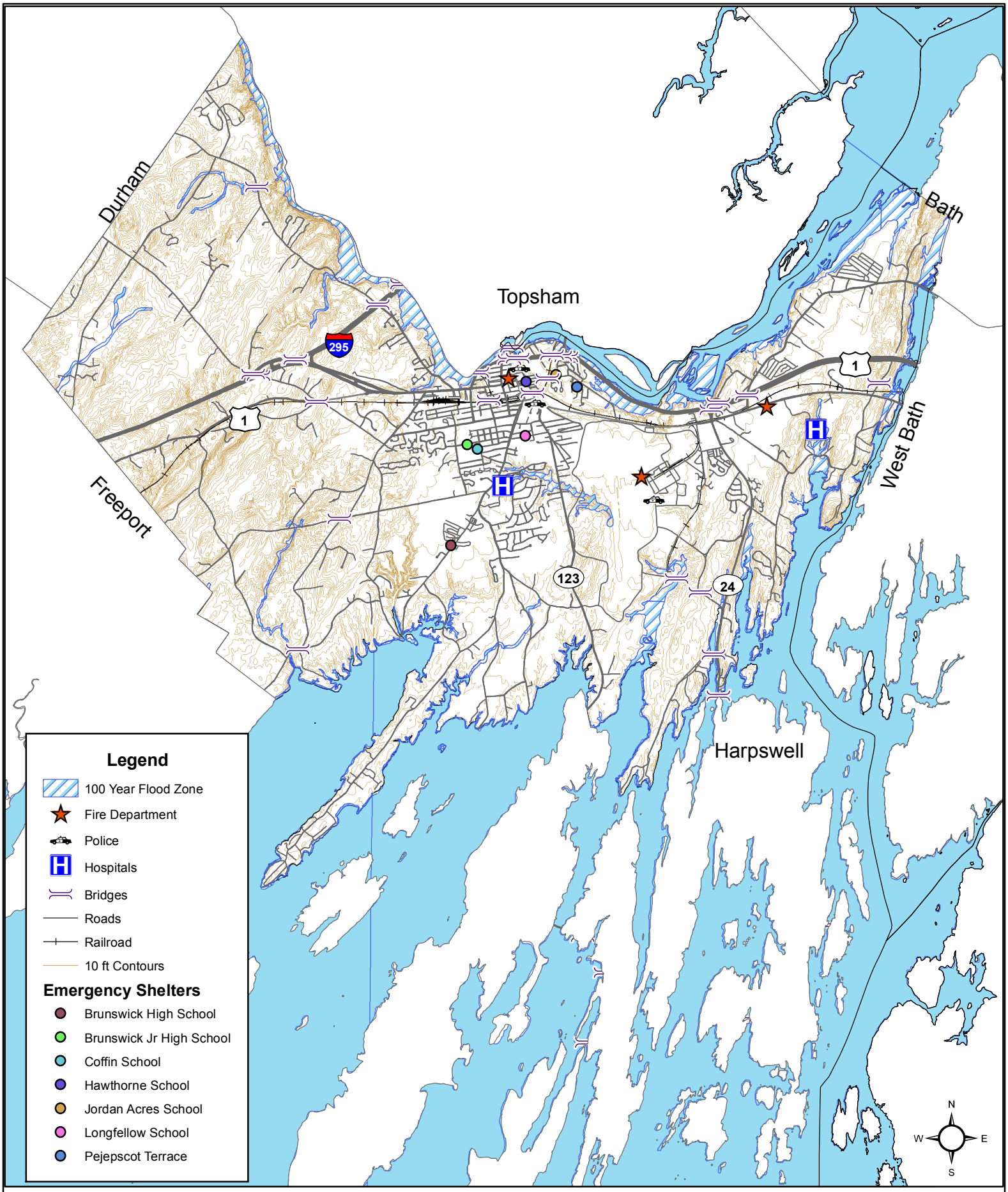
Data Sources: Maine Office of GIS, Red Cross of Southern Maine, Cumberland Emergency Management Agency. Created 9/29/2010.



Cumberland County Hazard Mitigation Plan: Town of Bridgton

0 0.5 1 2 3 Miles

Data Sources: Maine Office of GIS, Red Cross of Southern Maine, Cumberland Emergency Management Agency. Created 9/29/2010.



Cumberland County Hazard Mitigation Plan: Town of Brunswick

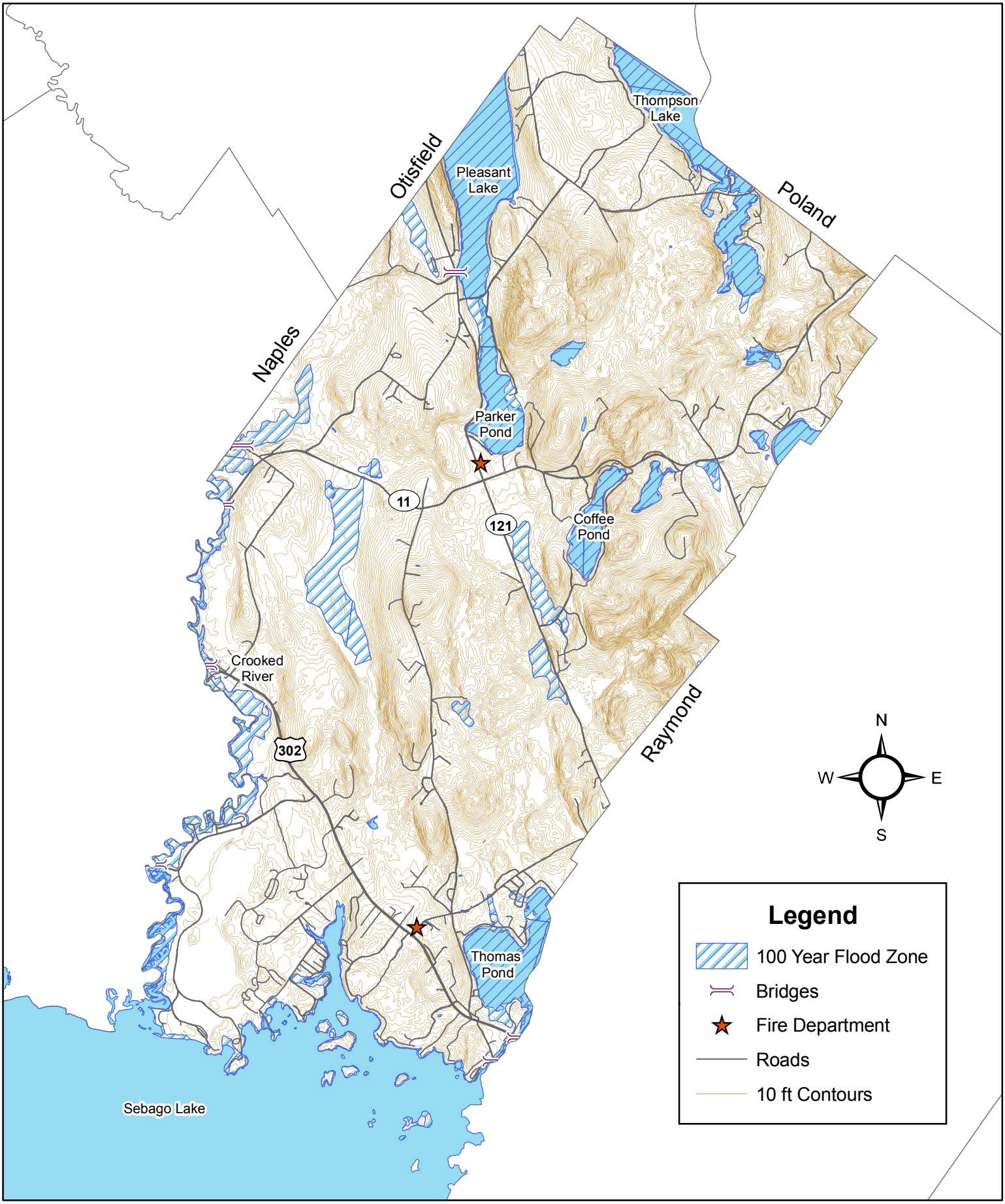
0 0.5 1 2 3 Miles

Data Source: Maine Office of GIS, Red Cross of Southern Maine, Cumberland Emergency Management Agency. Created 9/29/2010.

Cumberland County Hazard Mitigation Plan: Town of Cape Elizabeth

0 0.75 1.5 Miles

Data Sources: Maine Office of GIS, Red Cross of Southern Maine, Cumberland Emergency Management Agency. Created 9/29/2010.



Cumberland County Hazard Mitigation Plan: Town of Casco

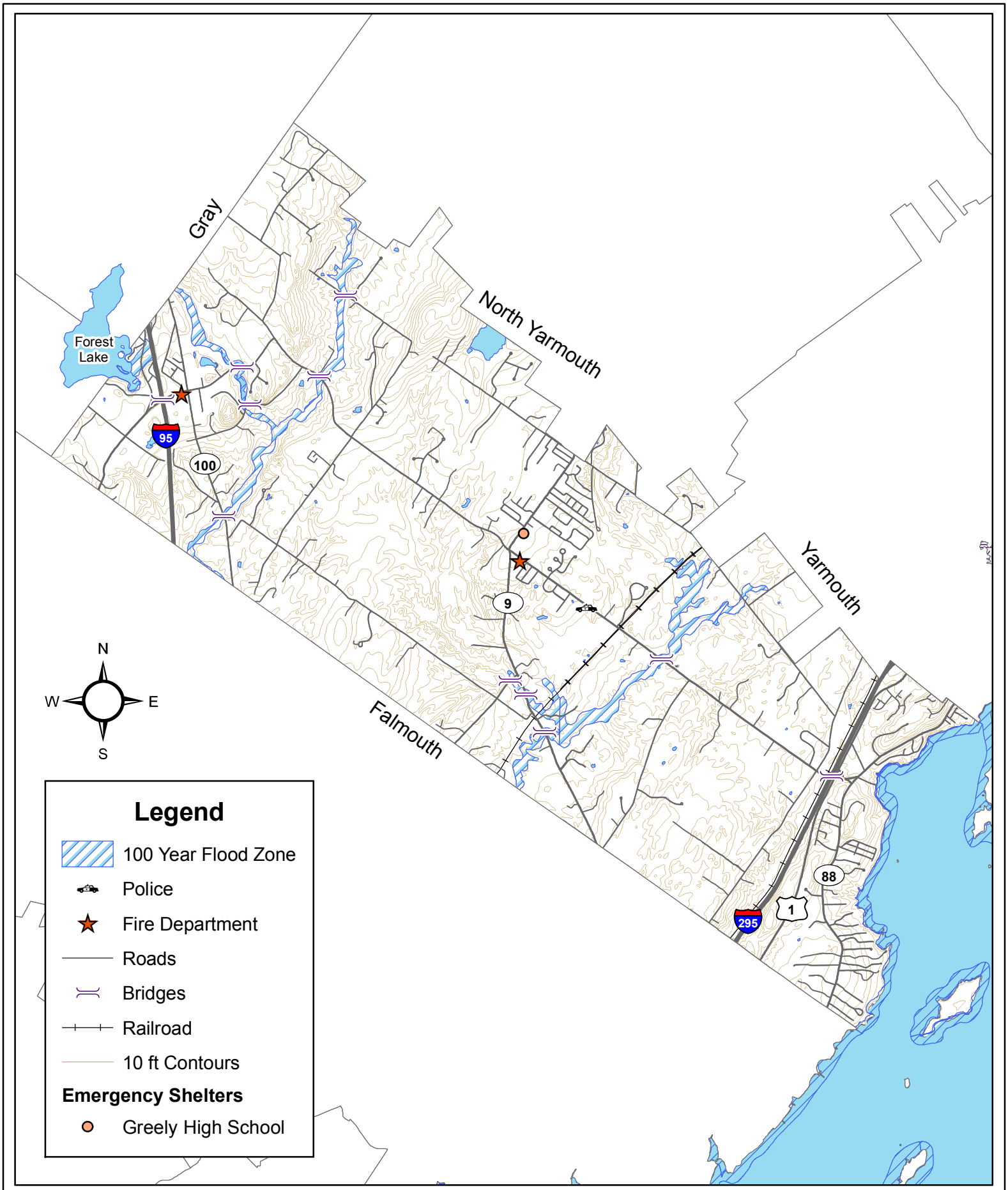
0 0.5 1 2 3 Miles

Data Sources: Maine Office of GIS, Red Cross of Southern Maine, Cumberland Emergency Management Agency. Created 9/29/2010.

Cumberland County Hazard Mitigation Plan: Town of Chebeague Island

0 0.75 1.5 Miles

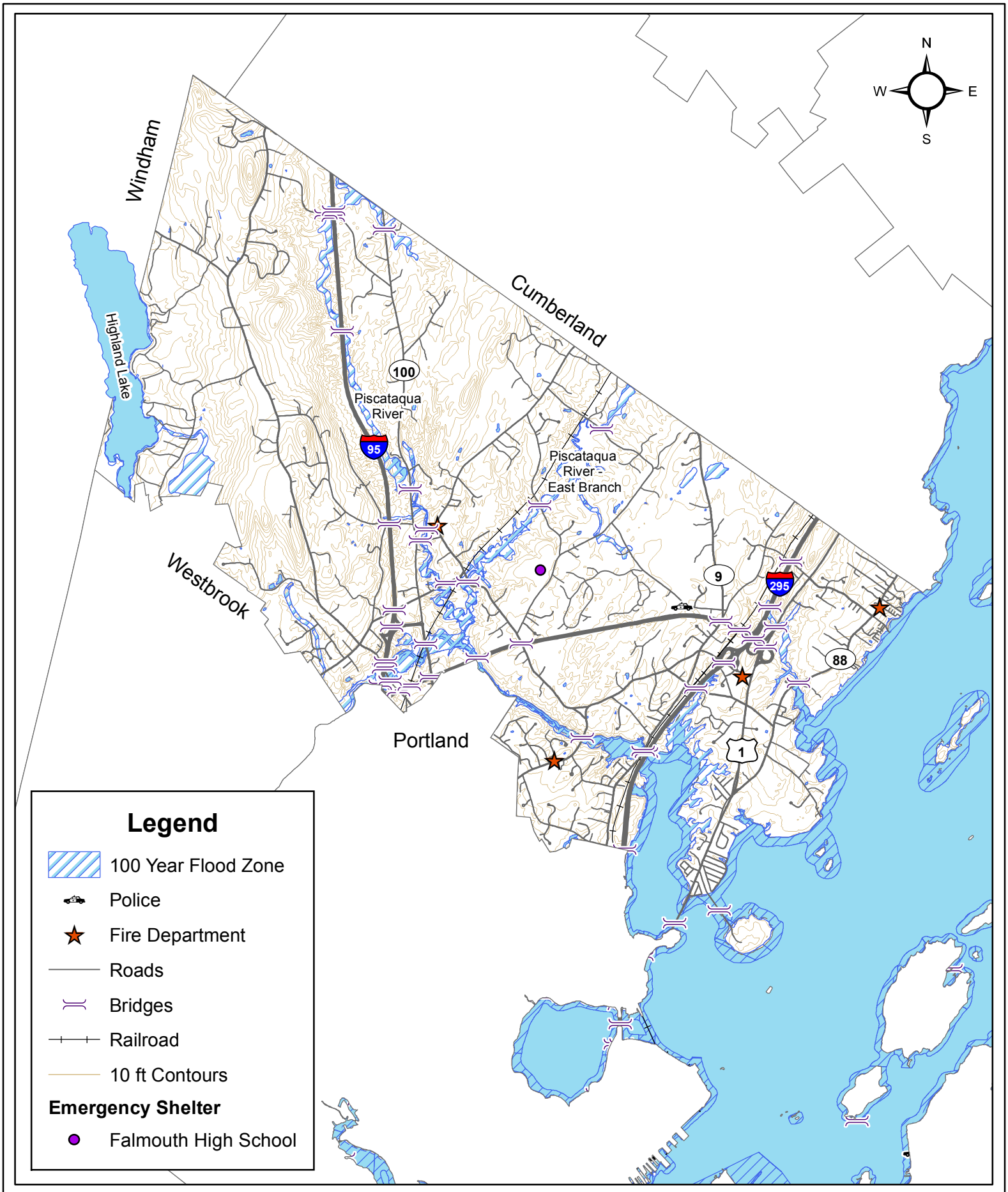
Data Sources: Maine Office of GIS, Red Cross of Southern Maine, Cumberland Emergency Management Agency. Created 9/29/2010.



Cumberland County Hazard Mitigation Plan: Town of Cumberland

0 0.5 1 2 3 Miles

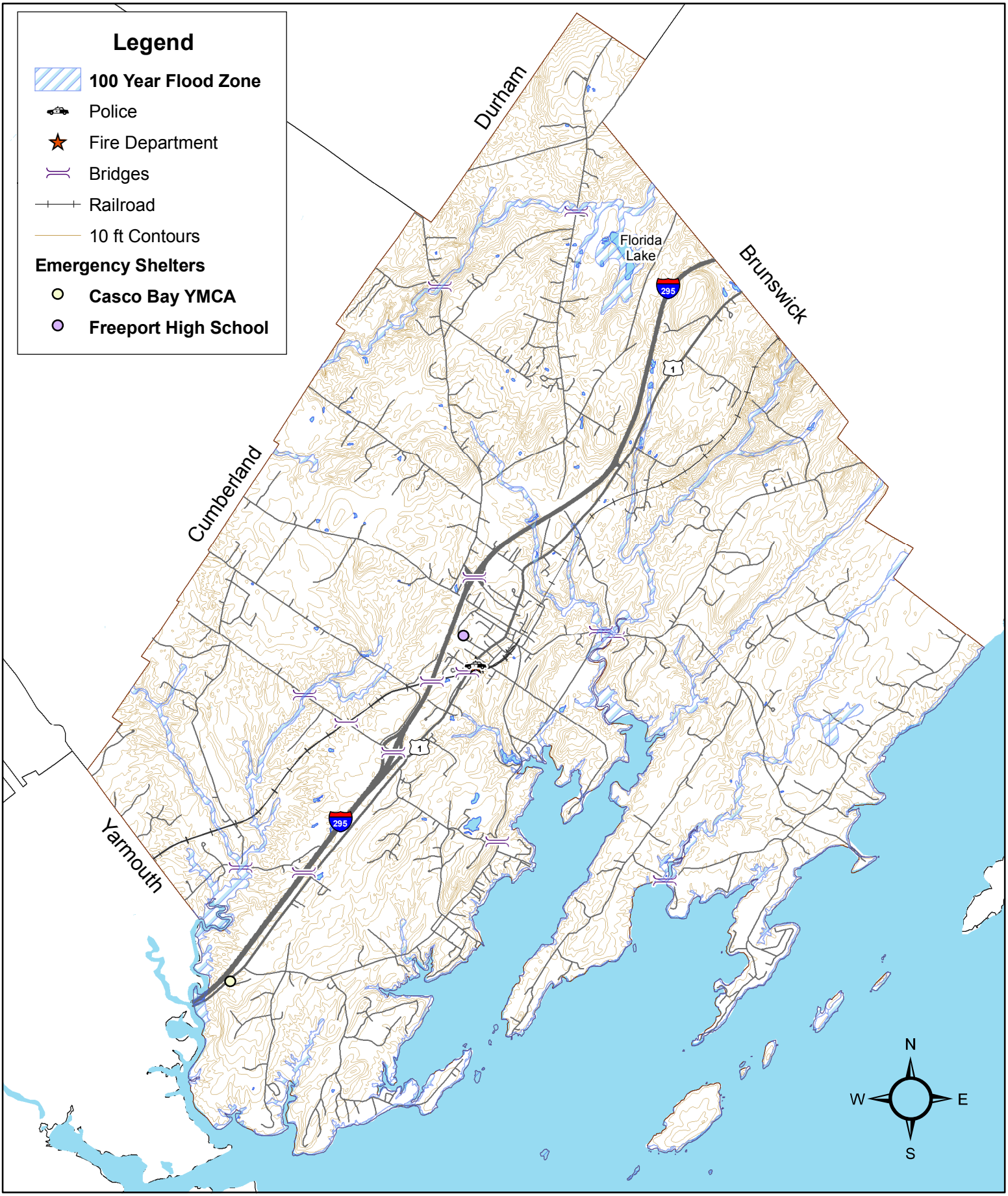
Data Sources: Maine Office of GIS, Red Cross of Southern Maine, Cumberland Emergency Management Agency. Created 9/29/2010.



Cumberland County Hazard Mitigation Plan: Town of Falmouth

0 0.5 1 2 3 Miles

Data Sources: Maine Office of GIS, Red Cross of Southern Maine, Cumberland Emergency Management Agency. Created 9/29/2010.



Cumberland Couny Hazard Mitigation Plan Town of Freeport

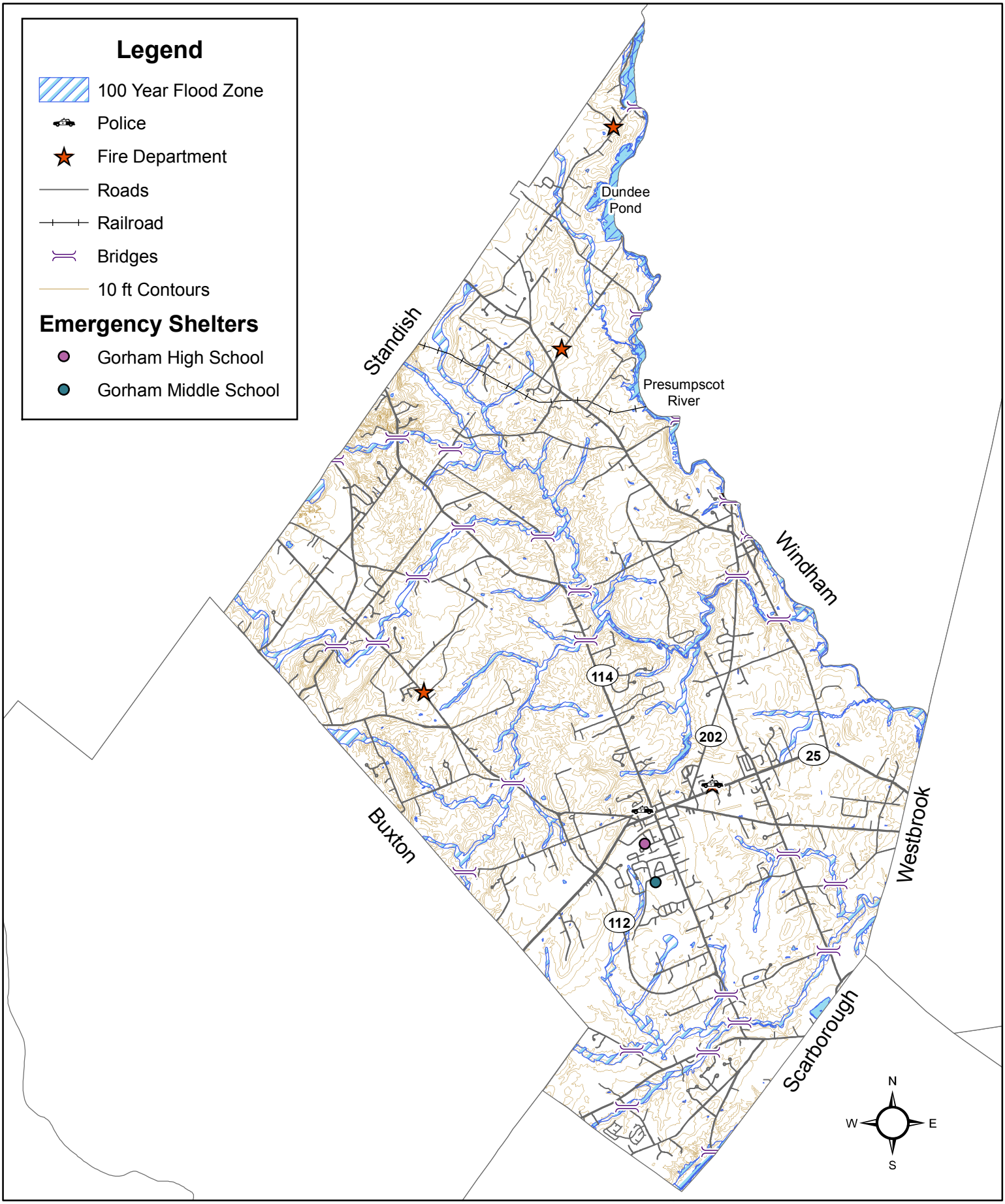
0 0.5 1 2 Miles

Data Source: Maine Office of GIS, Red Cross of Southern Maine, Cumberland Emergency Management Agency. Created 9/29/2010.

Cumberland County Hazard Mitigation Plan: Town of Frye Island

0 0.125 0.25 0.5 Miles

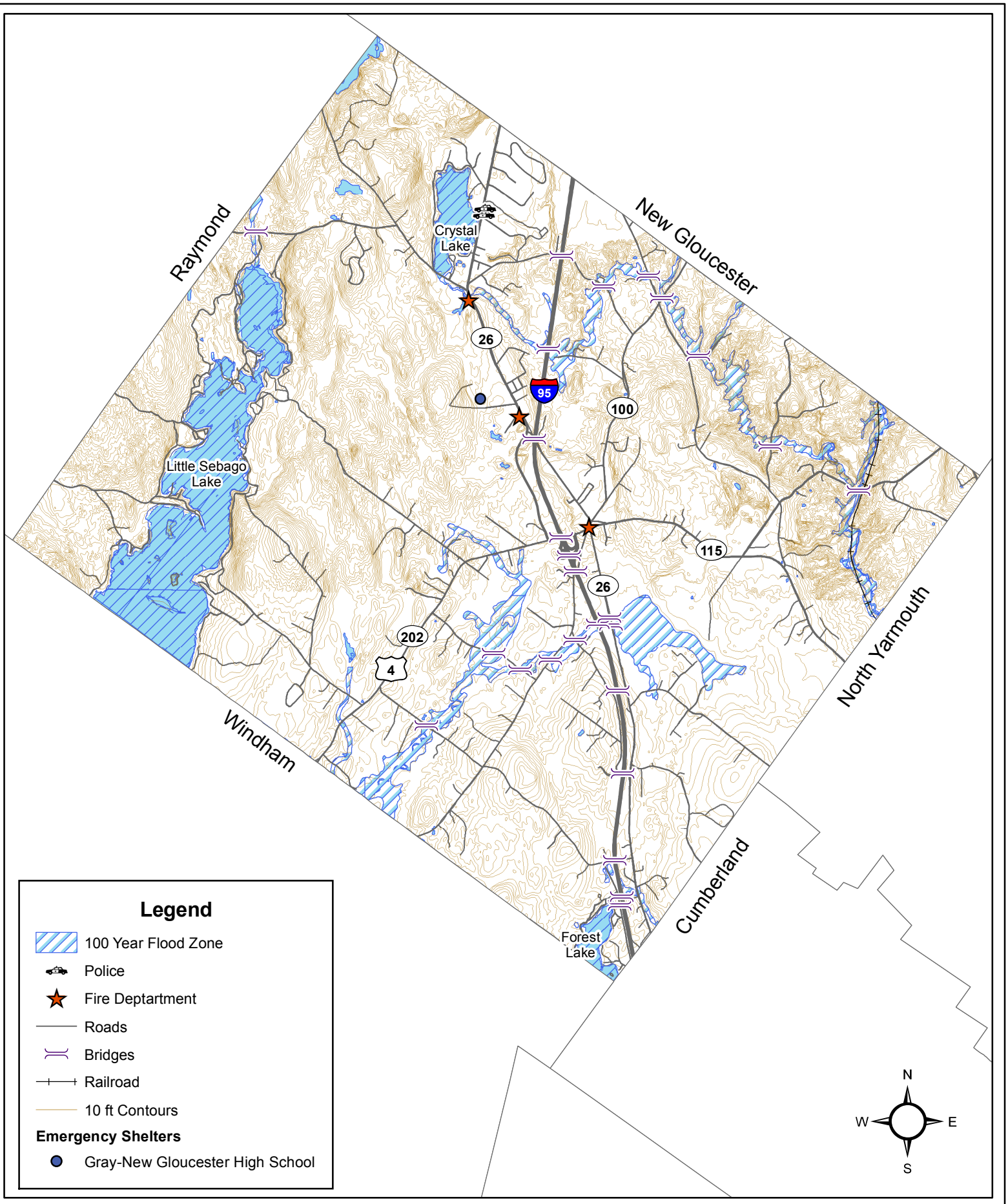
Data Sources: Maine Office of GIS, Red Cross of Southern Maine, Cumberland Emergency Management Agency. Created 9/29/2010.



Cumberland County Hazard Mitigation Plan: Town of Gorham

0 0.5 1 2 3 Miles

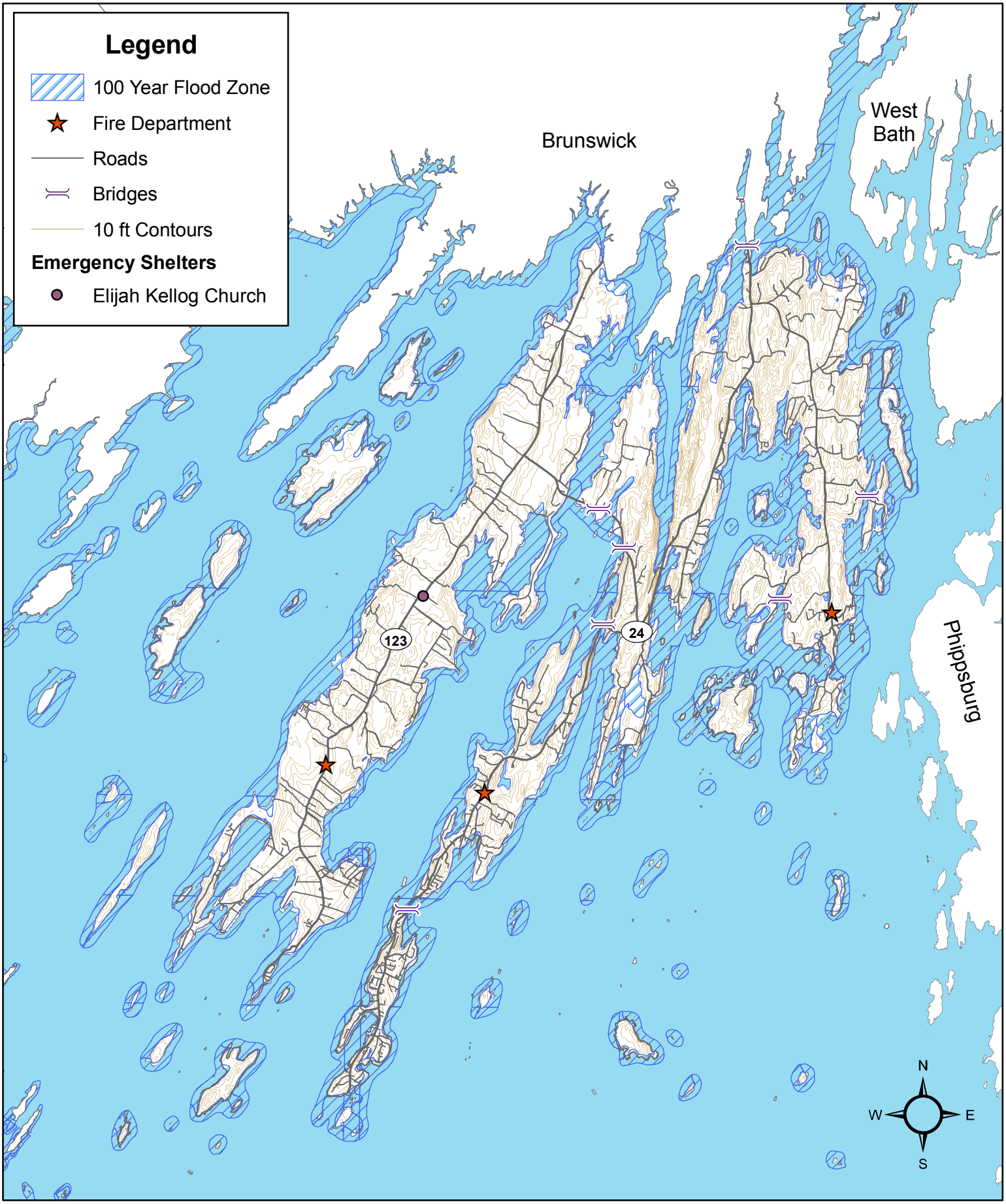
Data Sources: Maine Office of GIS, Red Cross of Southern Maine, Cumberland Emergency Management Agency. Created 9/29/2010.



Cumberland County Hazard Mitigation Plan: Town of Gray

0 0.5 1 2 3 Miles

Data Sources: Maine Office of GIS, Red Cross of Southern Maine, Cumberland Emergency Management Agency. Created 9/29/2010.



Cumberland County Hazard Mitigation Plan: Town of Harpswell

0 0.5 1 2 3 Miles

Data Sources: Maine Office of GIS, Red Cross of Southern Maine, Cumberland Emergency Management Agency. Created 9/29/2010.

Cumberland County Hazard Mitigation Plan: Town of Harrison

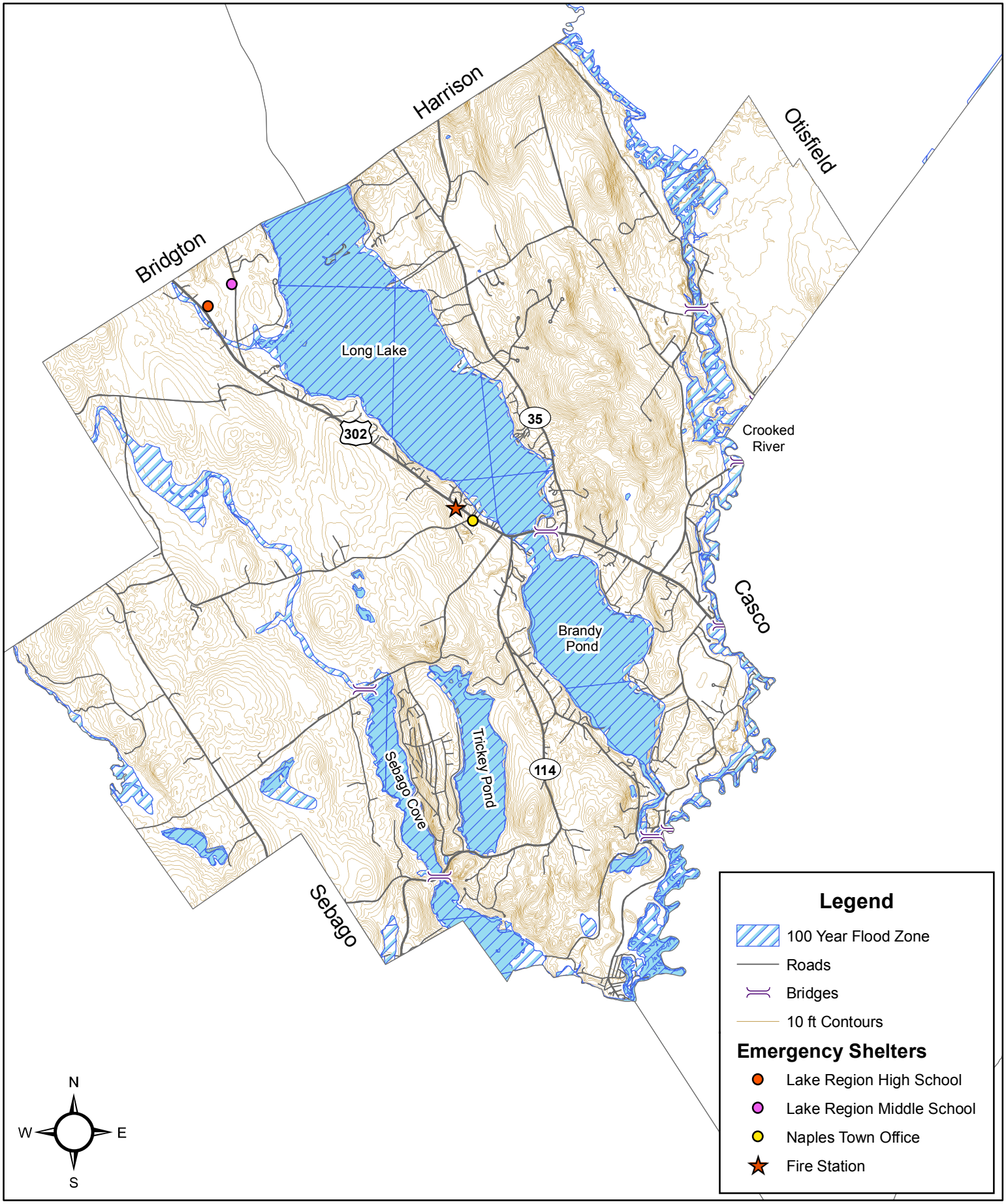
0 0.5 1 2 3 Miles

Data Sources: Maine Office of GIS, Red Cross of Southern Maine, Cumberland Emergency Management Agency. Created 9/29/2010.

Cumberland County Hazard Mitigation Plan: Town of Long Island

0 0.25 0.5 1 Miles

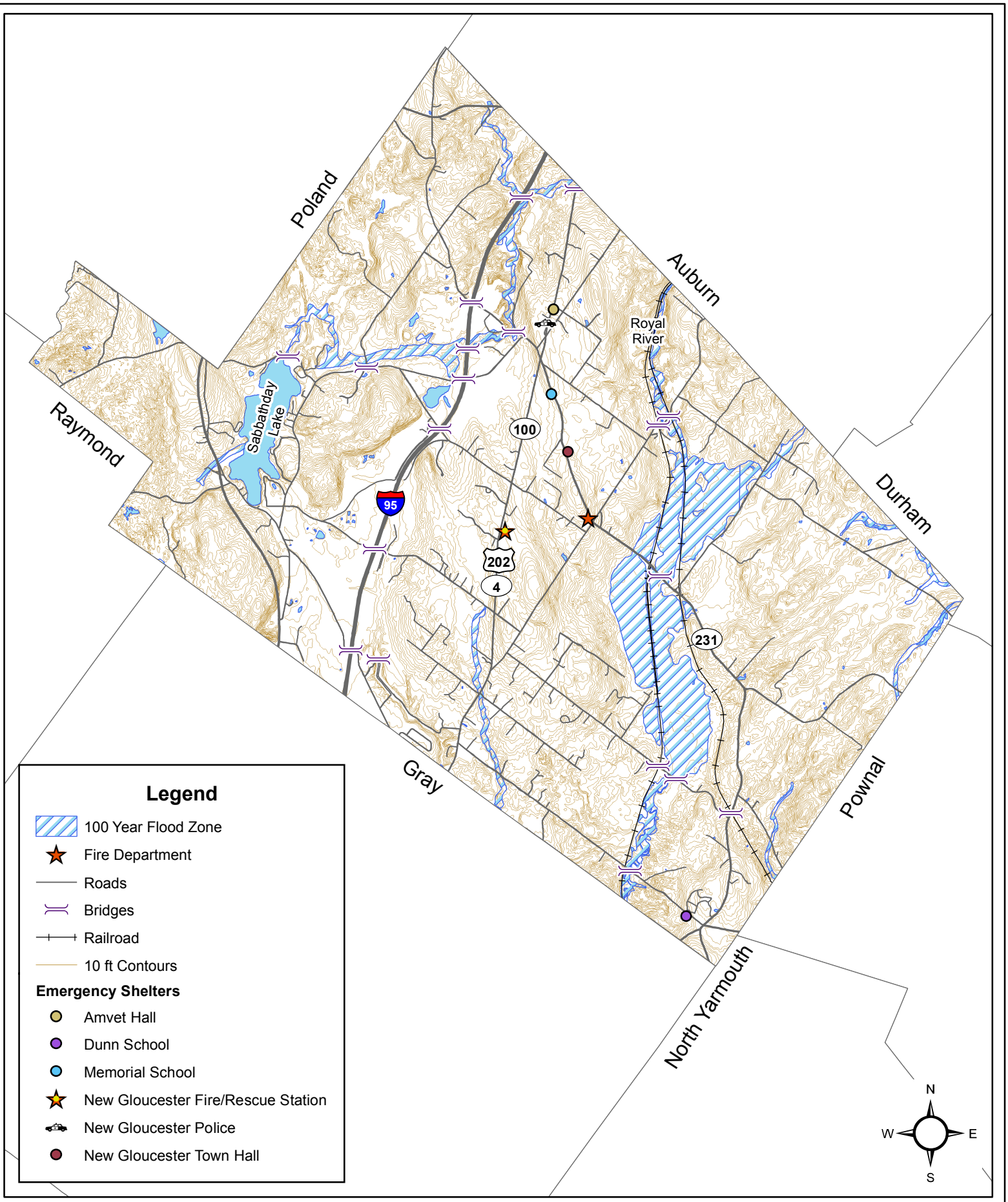
Data Sources: Maine Office of GIS, Red Cross of Southern Maine, Cumberland Emergency Management Agency. Created 9/29/2010.



Cumberland County Hazard Mitigation Plan: Town of Naples

0 0.5 1 2 3 Miles

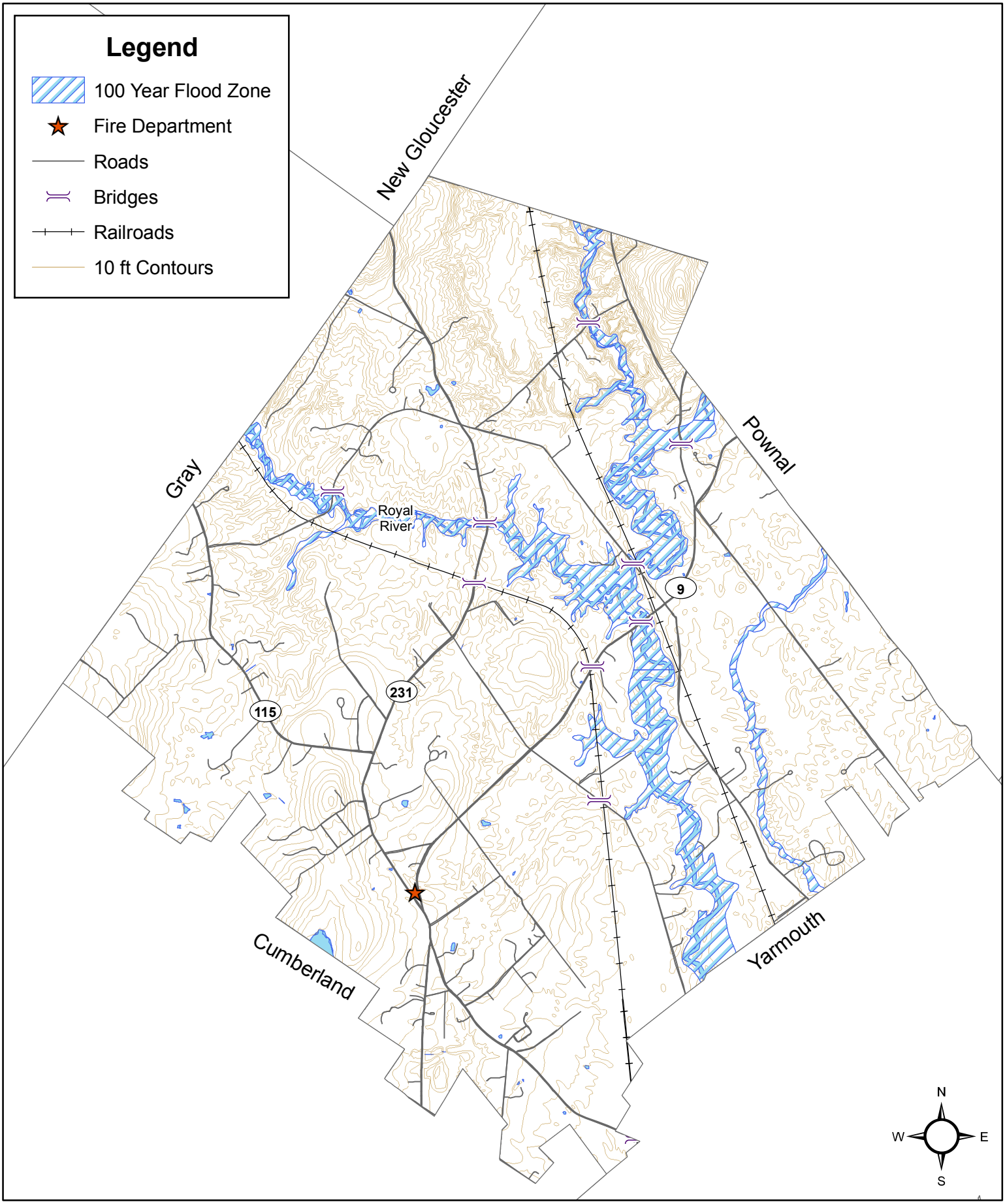
Data Sources: Maine Office of GIS, Red Cross of Southern Maine, Cumberland Emergency Management Agency. Created 9/29/2010.



Cumberland County Hazard Mitigation Plan: Town of New Gloucester

0 0.5 1 2 3 Miles

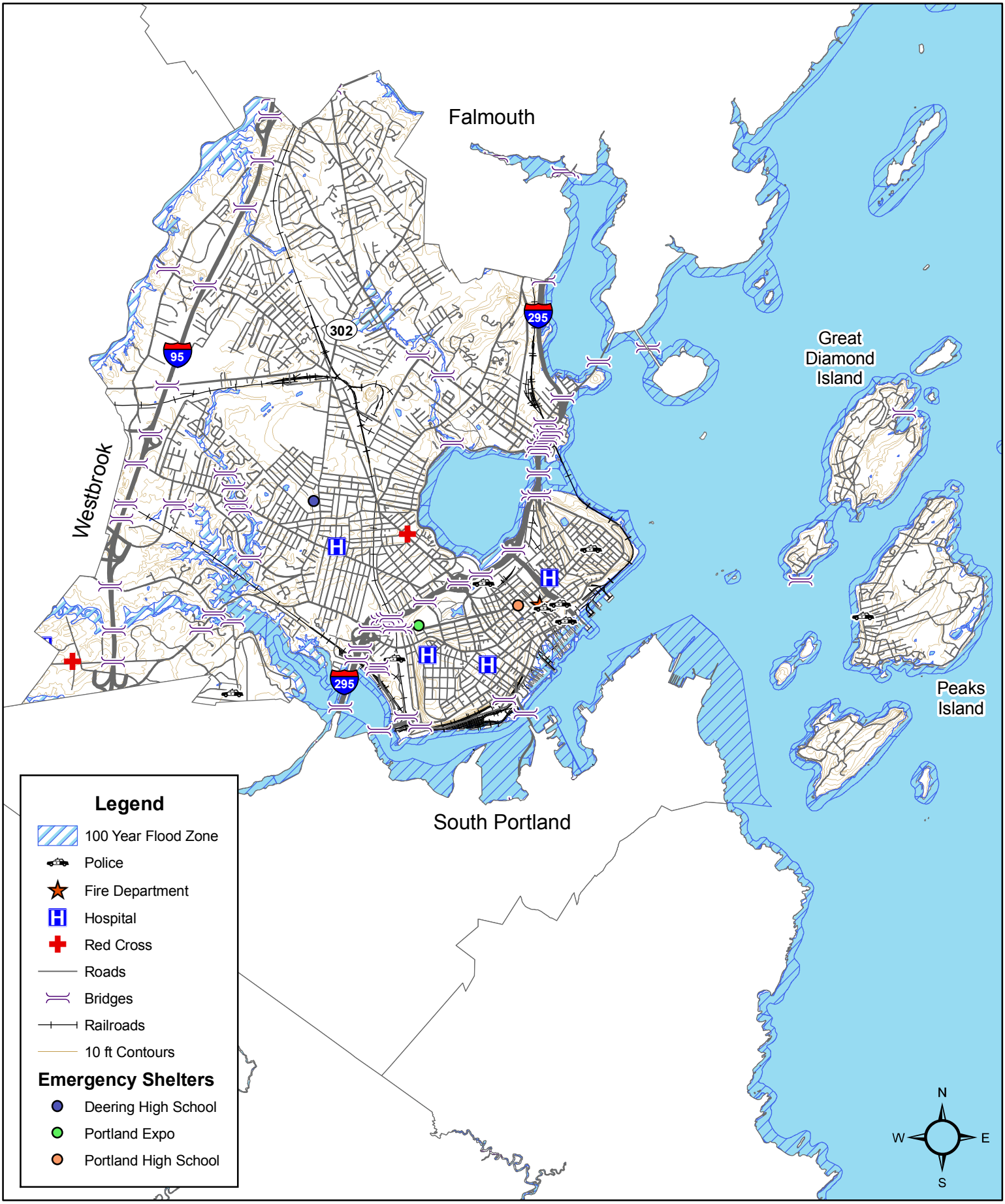
Data Sources: Maine Office of GIS, Red Cross of Southern Maine, Cumberland Emergency Management Agency. Created 9/29/2010.



Cumberland County Hazard Mitigation Plan: Town of North Yarmouth

0 0.5 1 2 Miles

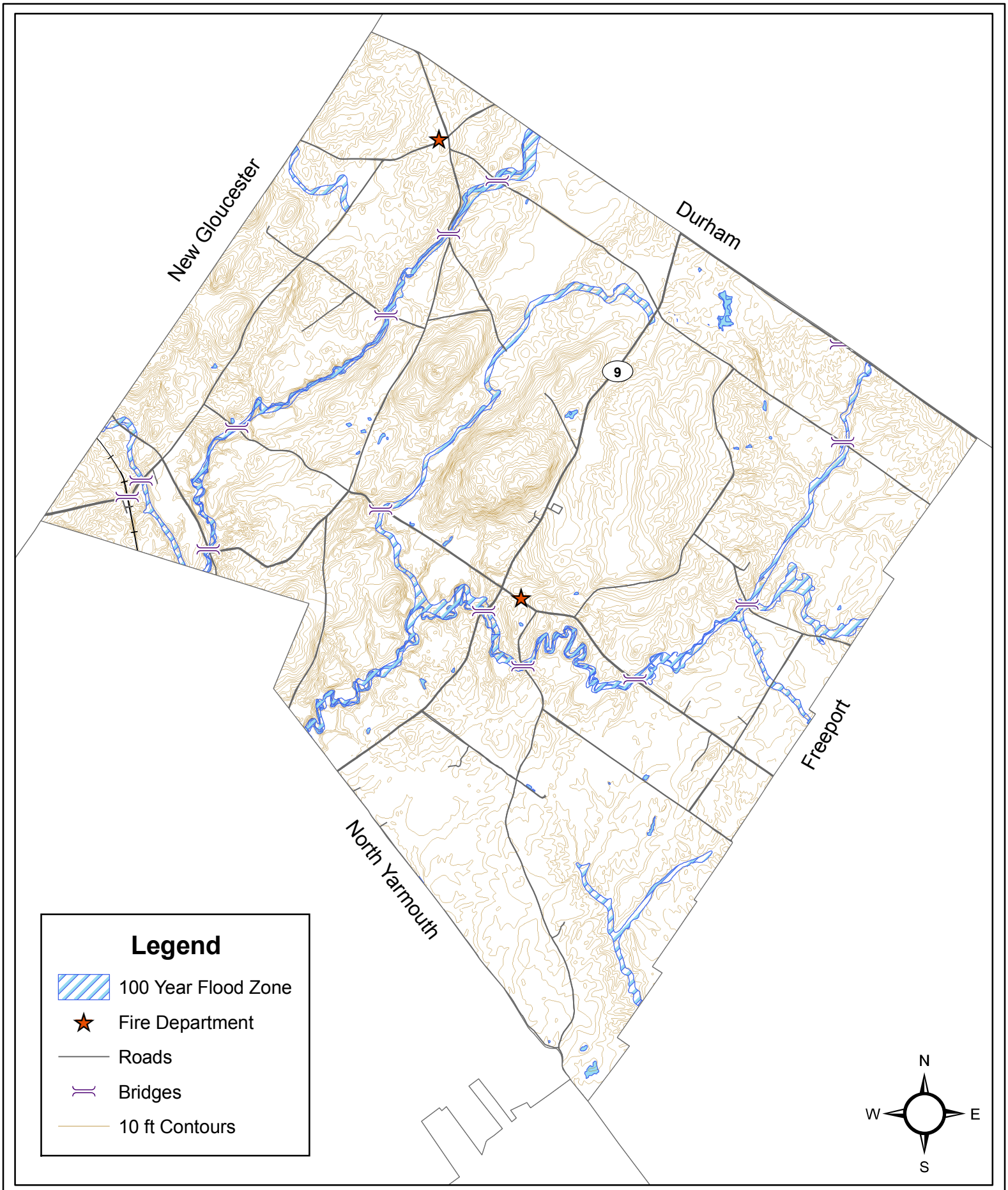
Data Sources: Maine Office of GIS, Red Cross of Southern Maine, Cumberland Emergency Management Agency. Created 9/29/2010.



Cumberland County Hazard Mitigation Plan: City of Portland

0 0.5 1 2 3 Miles

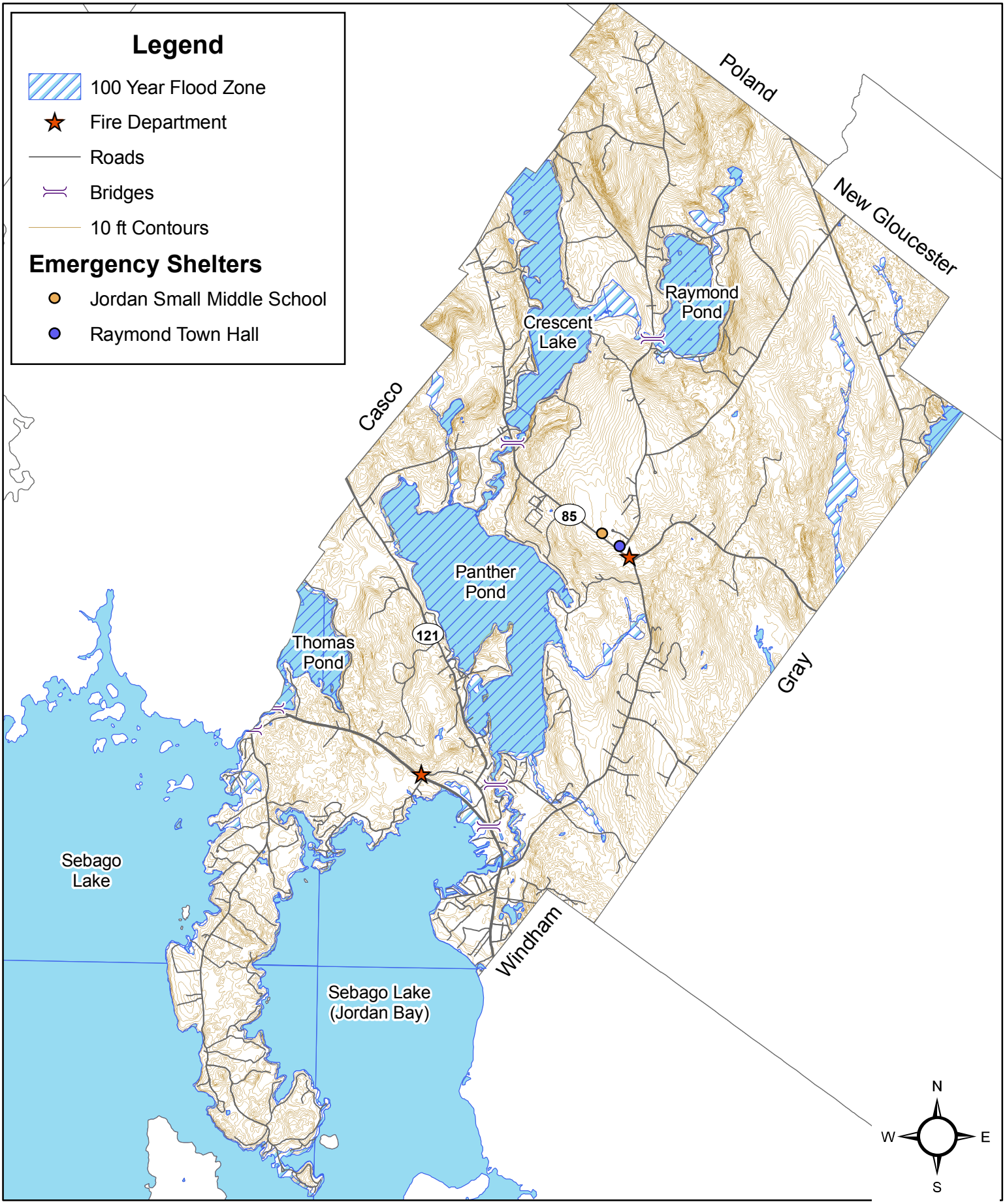
Data Sources: Maine Office of GIS, Red Cross of Southern Maine, Cumberland Emergency Management Agency. Created 9/29/2010.



Cumberland County Hazard Mitigation Plan: Town of Pownal

0 0.5 1 2 Miles

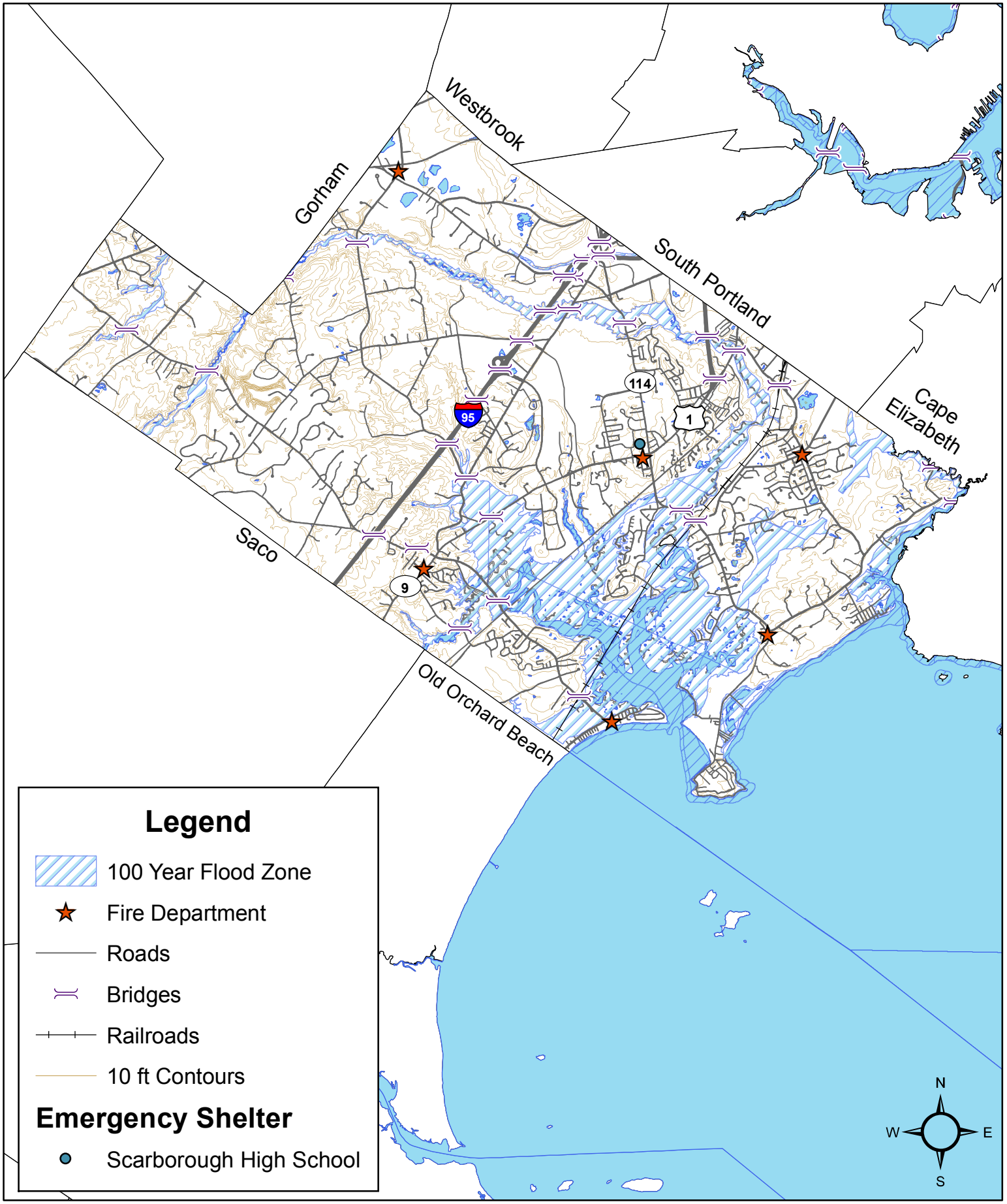
Data Sources: Maine Office of GIS, Red Cross of Southern Maine, Cumberland Emergency Management Agency. Created 9/29/2010.



Cumberland County Hazard Mitigation Plan: Town of Raymond

0 0.5 1 2 3 Miles

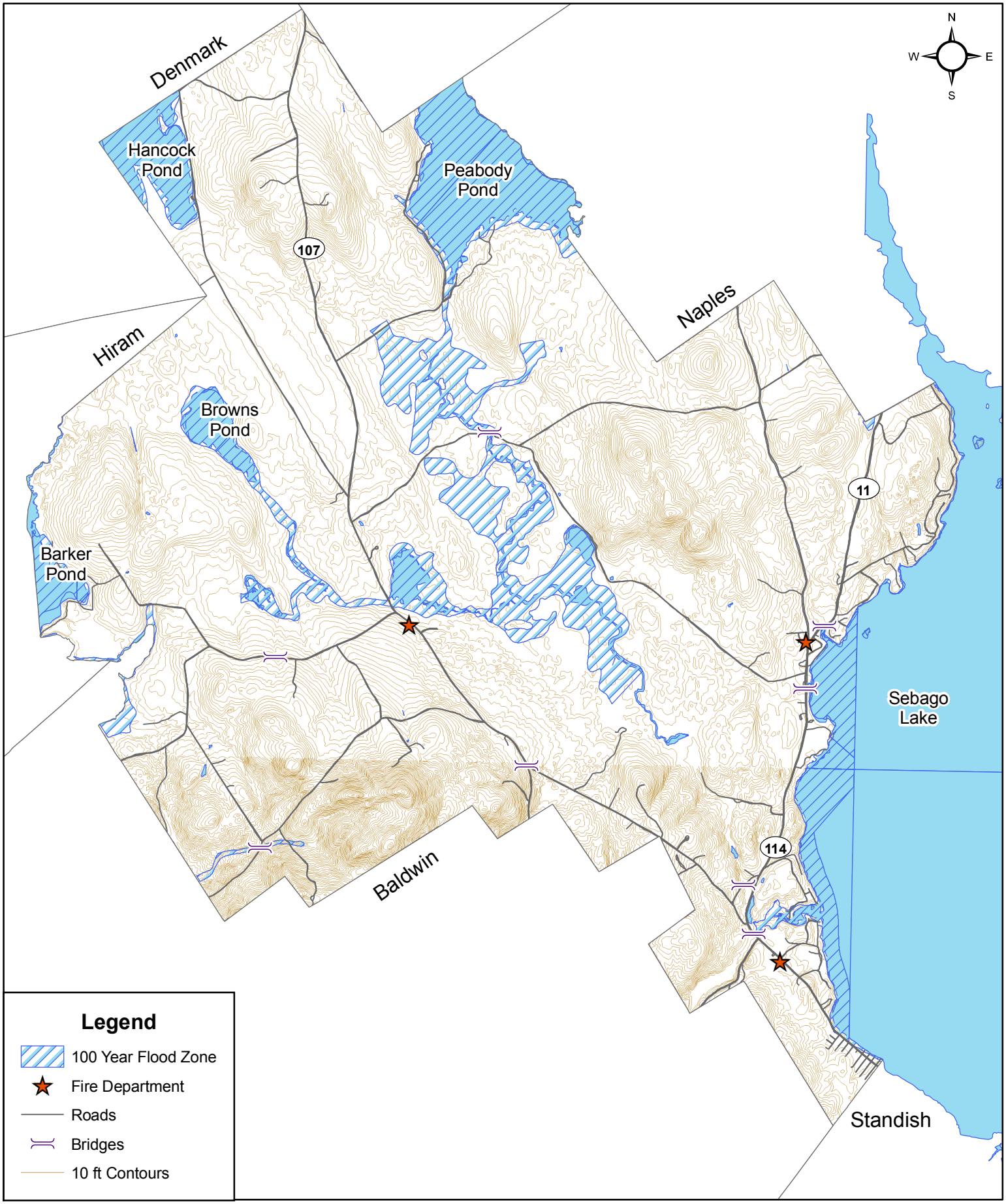
Data Sources: Maine Office of GIS, Red Cross of Southern Maine, Cumberland Emergency Management Agency. Created 9/29/2010.



Cumberland County Hazard Mitigation Plan: Town of Scarborough

0 0.5 1 2 3 Miles

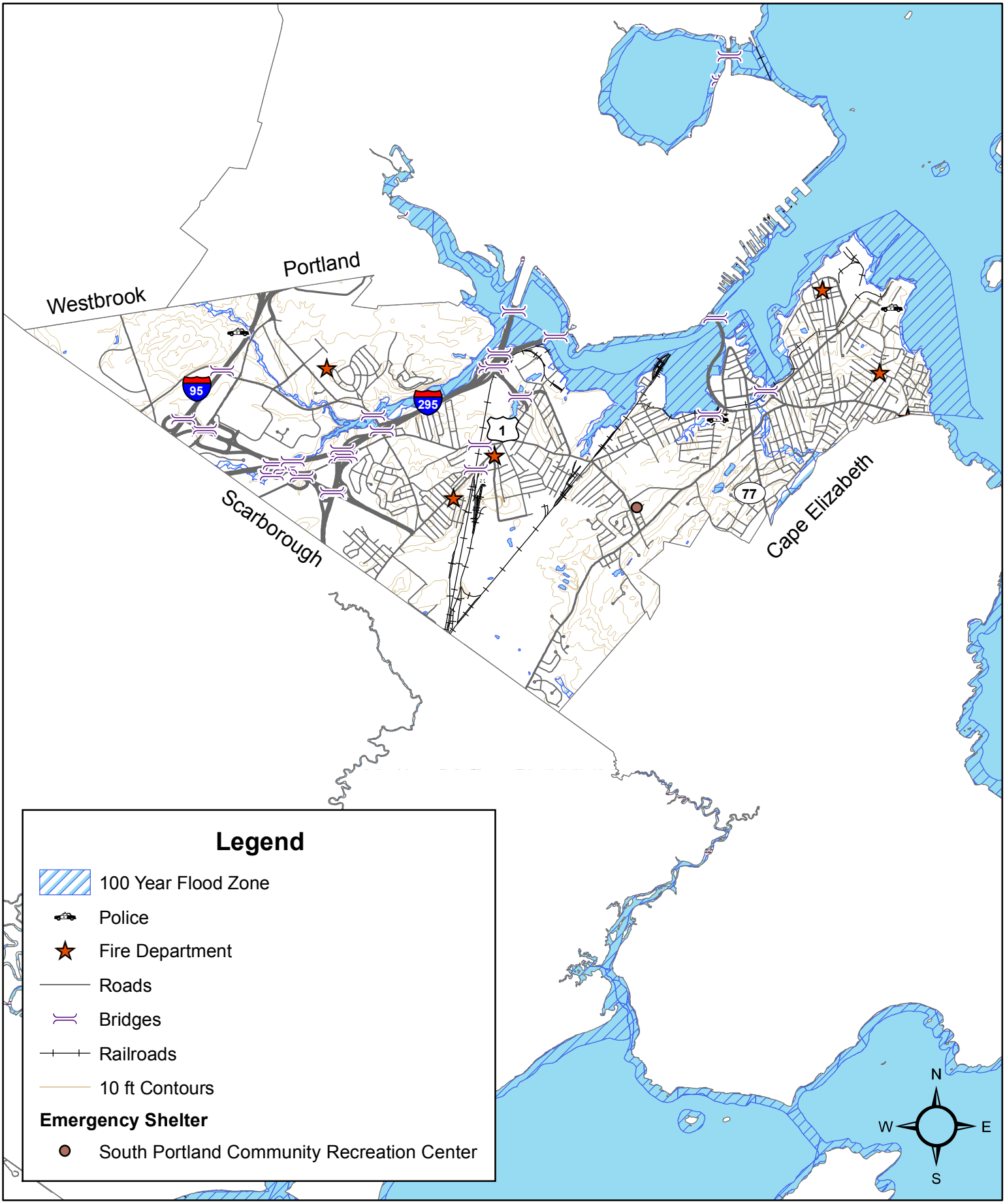
Data Sources: Maine Office of GIS, Red Cross of Southern Maine, Cumberland Emergency Management Agency. Created 9/29/2010.



Cumberland County Hazard Mitigation Plan: Town of Sebago

0 0.5 1 2 Miles

Data Sources: Maine Office of GIS, Red Cross of Southern Maine, Cumberland Emergency Management Agency. Created 9/29/2010.



Cumberland County Hazard Mitigation Plan: City of South Portland

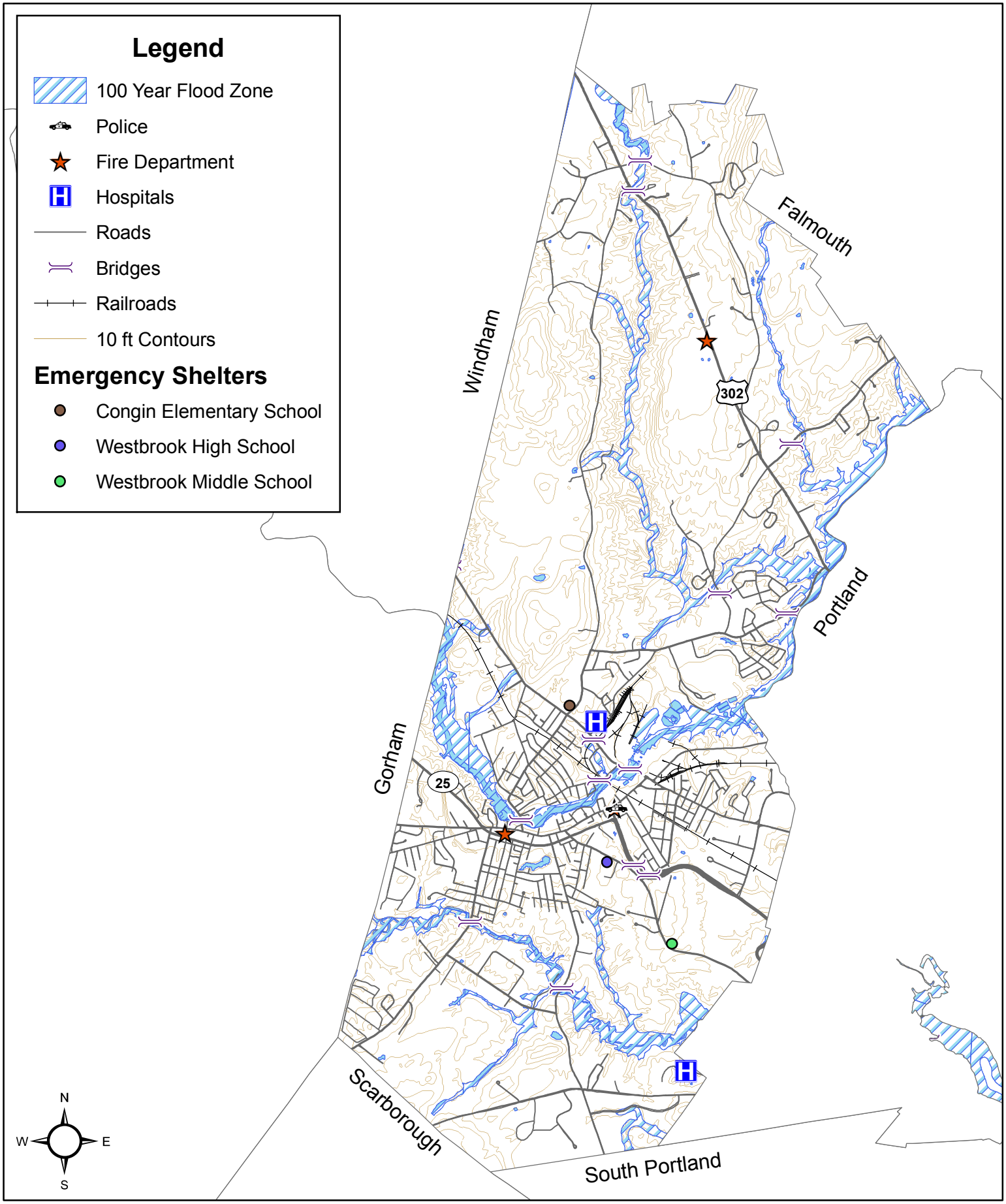
0 0.5 1 2 Miles

Data Sources: Maine Office of GIS, Red Cross of Southern Maine, Cumberland Emergency Management Agency. Created 9/29/2010.

Cumberland County Hazard Mitigation Plan: Town of Standish

0 0.5 1 2 3 Miles

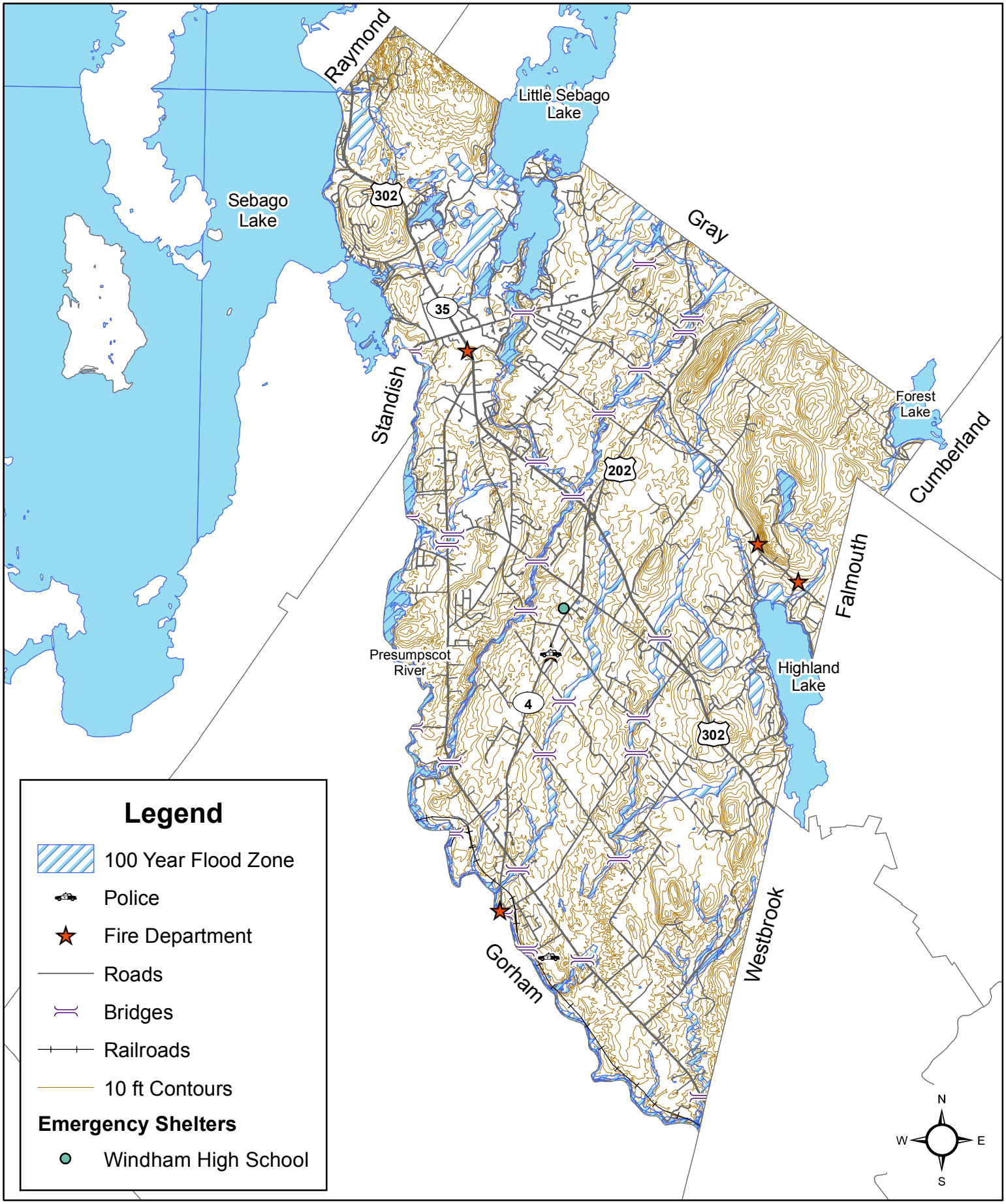
Data Sources: Maine Office of GIS, Red Cross of Southern Maine, Cumberland Emergency Management Agency. Created 9/29/2010.



Cumberland County Hazard Mitigation Plan: City of Westbrook

0 0.5 1 2 Miles

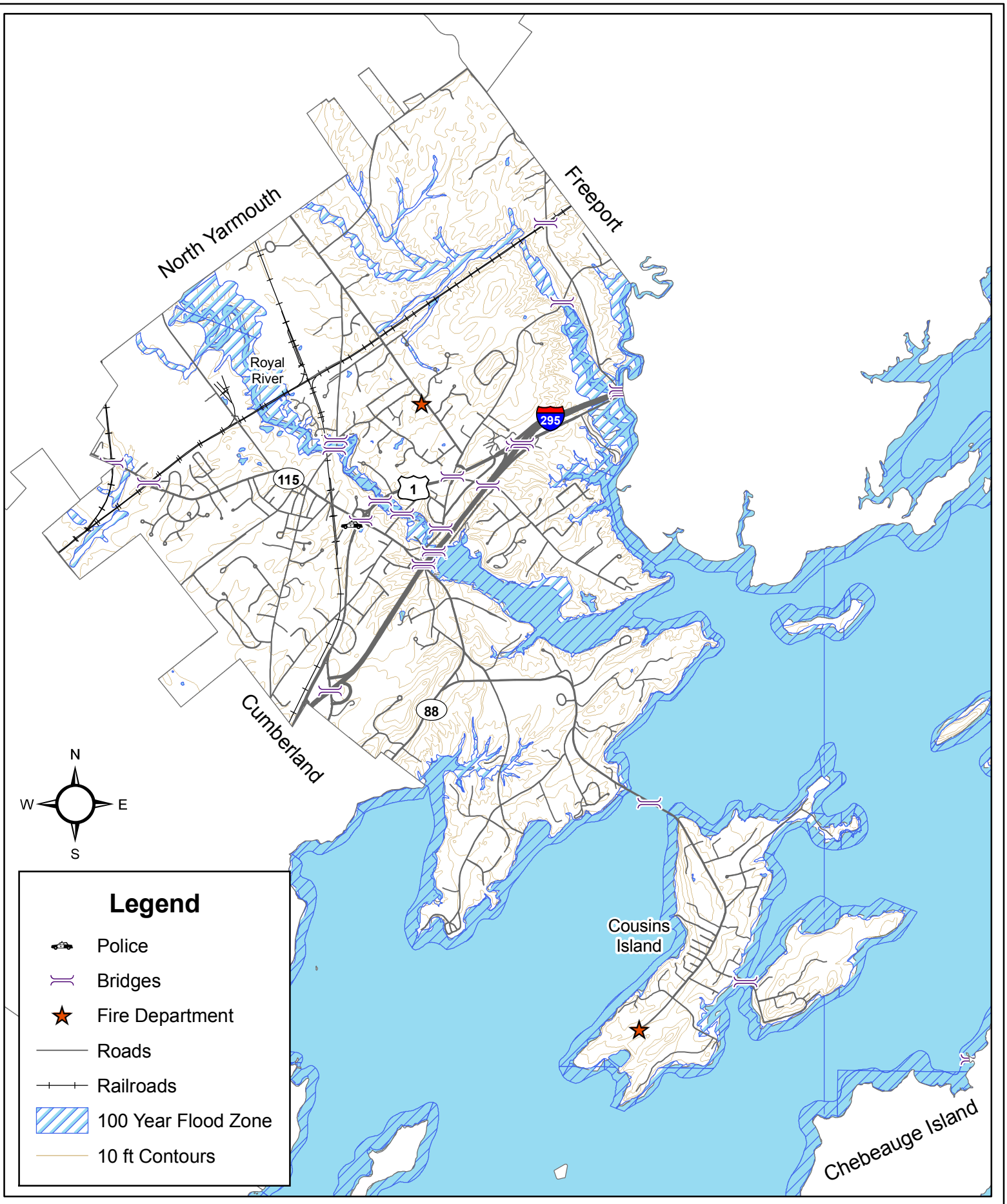
Data Sources: Maine Office of GIS, Red Cross of Southern Maine, Cumberland Emergency Management Agency. Created 9/29/2010.



Cumberland County Hazard Mitigation Plan: Town of Windham

0 0.5 1 2 3 4 Miles

Data Sources: Maine Office of GIS, Red Cross of Southern Maine, Cumberland Emergency Management Agency. Created 9/29/2010.



Cumberland County Hazard Mitigation Plan: Town of Yarmouth

0 0.5 1 2 Miles

Data Sources: Maine Office of GIS, Red Cross of Southern Maine, Cumberland Emergency Management Agency. Created 9/29/2010.

SECTION V – MITIGATION STRATEGY

LOCAL HAZARD MITIGATION GOALS

Requirement §201.6(c)(3)(i):	The hazard mitigation strategy shall include a] description of mitigation goals to reduce or avoid long-term vulnerabilities to the identified hazards.

The following pages contain goals, objectives and strategic mitigation actions for each of the hazards identified earlier in this plan, followed by a town by town summary of prioritized projects.

The goals, objectives and strategic actions were originally developed for the 2005 plan by the hazard mitigation planning team. The goals, objectives and actions remain appropriate for this 2011 update.

The following presents a list of the mitigation goals, both general and specific, and the objectives used to reduce or avoid long-term vulnerability on the County thereby reducing the impact of natural disasters on people, property and the infrastructure.

Goal #1: Reduce damage, injury and loss of life resulting from natural hazards in general in Cumberland County.

Objective 1.1: Prevention – develop or improve public policies that influence the way land and buildings are developed and built so as to minimize the risks from hazard events.

Objective 1.2: Property protection – make modifications to existing buildings and structures to protect them from hazards, or remove them from the hazard area.

Objective 1.3: Public education and awareness – inform residents about hazards and the measures necessary to avoid potential damage and injury.

Objective 1.4: Natural resource protection – implement actions to protect or restore the functions of natural systems.

Objective 1.5: Emergency services – implement or improve policies, procedures and equipment to protect people and property during and after a hazard event.

Objective 1.6: Structural projects – protect people and property by installing and/or improving structures to control hazards.

Goal #2: Reduce damage, injury and loss of life resulting from flooding in Cumberland County.

Objective 2.1: Prevention – develop or improve public policies that influence the way land and buildings are developed and built so as to minimize the risks from flooding.

Objective 2.2: Property protection – make modifications to existing buildings and structures to protect them from flooding, or remove them from the flood zone.

Objective 2.3: Public education and awareness – inform residents about flooding and the measures necessary to avoid potential damage and injury.

Objective 2.4: Emergency services – implement or improve policies, procedures and equipment to protect people and property during and after a flooding event.

Objective 2.5: Structural projects – protect people and property by installing and/or improving structures to control flooding.

Objective 2.6: Encourage all towns and cities to stay compliant with the National Flood Insurance Program.

Goal #3: Reduce damage, injury and loss of life resulting from severe summer and winter storms in Cumberland County.

Objective 3.1: Prevention – develop or improve public policies that influence the way land and buildings are developed and built so as to minimize the risks from severe summer and winter storms.

Objective 3.2: Property protection – make modifications to existing buildings and structures to protect them from severe summer and winter storms.

Objective 3.3: Public education and awareness – inform residents about severe summer and winter storms and the measures necessary to avoid potential damage and injury.

Objective 3.4: Emergency services – implement or improve policies, procedures and equipment to protect people and property during and after a severe summer or winter storm.

Goal #4: Reduce damage, injury and loss of life resulting from wildfires in Cumberland County.

Objective 4.1: Prevention – develop or improve public policies that influence the way land and buildings are developed and built so as to minimize the risks from wildfires.

Objective 4.2: Property protection – make modifications to existing buildings and structures to protect them from wildfires.

Objective 4.3: Public education and awareness – inform residents about wildfires and the measures necessary to avoid potential damage and injury.

Objective 4.4: Emergency services – implement or improve policies, procedures and equipment to protect people and property during and after a wildfire.

IDENTIFICATION AND ANALYSIS OF MITIGATION ACTIONS

Requirement §201.6(c)(3)(ii):	The mitigation strategy shall include a] section that identifies and analyzes a comprehensive range of specific mitigation actions and projects being considered to reduce the effects of each hazard, with particular emphasis on new and existing buildings and infrastructure.

The goals and objectives presented above were used to determine the measures presented in the following table. The measures were prioritized and scored in order to determine a ranking of importance for the measures. The following table lists the mitigation measures identified in this plan along with the appropriate party(s) responsible for the implementation of that measure. Winter and summer storms were categorized together into severe storms in the original plan and have been left that way for this update.

HAZARD – FLOODING		RESPONSIBLE PARTY		
MEASURE	**Timeframe**	**CCEMA**	**Local EMA's**	**Local Officials**
Measure 2.4.3. Develop an emergency action plan to allow movement of emergency vehicles for events in which trains are stopped blocking streets and intersections.	3-5 years	x	x	
Measure 2.1.14. Review Emergency Action Plans for any dams with such plans on an annual basis to ensure that contact info is still accurate.	1 year	x	x	
Measure 2.1.1. Capital Improvement Plan prioritization should consider locations that suffer repetitive losses due to natural hazards.	2-4 years			x
Measure 2.1.4. Encourage river/stream corridor protection.	2-5 years			x
Measure 2.1.9. Stormwater management regulations for new development and redevelopment.	2-5 years			x
Measure 2.1.11. Require 50-year design storm for municipal or private conveyance systems.	2-4 years			x
Measure 2.1.12. Procedures to consider impacts on upstream and downstream flooding when replacing culverts, bridges, drainage systems, and size replacement accordingly.	2-4 years	x		x
Measure 2.2.1. Strengthen operations and maintenance procedures for storm drain systems.	1-5 years			x
Measure 2.3.2. Raise awareness of the dangers of driving through flooded areas.	1-2 years	x		
Measure 2.4.2. Develop a barricade plan to block flooded roadways in order to prevent crossing by drivers and acquire necessary barricade equipment and supplies.	1-3 years			x
Measure 2.3.3. Educate the public to stay away from flooded riverbanks and coastal wave-action areas.	1-2 years	x	x	
Measure 2.1.2. In comprehensive plan development and updating, recognize the dangers of floodplain development and plan compatible uses in such areas.	1-5 years			x
Measure 2.1.6. Invest in GIS hardware, software, and training to allow municipality to better manage flooding hazards.	1-10 years	x		x
Measure 2.1.10. Implement more restrictive floodplain ordinance.	1-5 years			x
Measure 2.1.5. Implement open space preservation program.	1-5 years	x		x
Measure 2.5.5. Ensure that sanitary sewer pump stations and facilities and drinking water systems are flood proofed.	3-10 years			x
Measure 2.1.3. Develop stormwater management master plans for growth zones.	1-10 years			x
Measure 2.3.1. Provide information (particularly to property owners in flood zones) on the National Flood Insurance Program, flood proofing, basement protection techniques, and post-flood clean-up.	2-4 years	x	x	
Measure 2.5.3. Undertake corrective measures to public infrastructure suffering repeated damage from localized flooding.	1-10 years			x

HAZARD – FLOODING (continued)		RESPONSIBLE PARTY		
MEASURE	**Timeframe**	**CCEMA**	**Local EMA's**	**Local Officials**
Measure 2.1.7. Participate in NFIP's community rating system/improve current rating.	2-5 years			x
Measure 2.1.8. Implement building codes for construction in floodplain.	3-5 years			x
Measure 2.4.1. Implement a flood warning system throughout the county similar to reverse-911 system.	5-10 years	x		
Measure 2.5.2. Elevate roadways.	1-10 years			x
Measure 2.5.4. Increase conveyance system capacity.	1-5 years			x
Measure 2.1.13. Flood mitigation grants or loans to homeowners.	5-10 years	x	x	

HAZARD – SEVERE STORMS		RESPONSIBLE PARTY		
MEASURE	**Timeframe**	**CCEMA**	**Local EMA's**	**Local Officials**
Measure 3.1.1. Educate the public about backup power options (generator, solar, wind, hydro.) and non-electrical heating options and carbon monoxide poisoning from heating sources.	1-3 years	x	x	x
Measure 3.1.2. Educate the public about heart stress when working in winter conditions and hypothermia.	1-3 years	x	x	
Measure 3.1.3. Educate the public about keeping walkways, egress routes and utility access cleared of snow.	1-3 years	x		x
Measure 3.1.4. Educate the public about preventing ice dams on roofs and removing snow loads from roofs.	1-3 years			x
Measure 3.1.5. Educate the public about preventive methods, including cutting large trees from around homes, driveways and utilities and freeze-proofing water pipes.	1-3 years		x	x
Measure 3.1.6. Educate the public about winter driving dangers.	1-3 years	x	x	x
Measure 3.1.7. Educate the public about Insurance availability for severe storm damages.	1-3 years	x	x	
Measure 3.2.1. Develop alternate transportation means for emergency responders.	2-5 years		x	
Measure 3.2.2. Train and equip a quick response a Road Debris Clearance Team from public works, fire department, and volunteers.	1-3 years		x	
Measure 3.2.3. Develop a municipal road snow and ice removal operations plan including a prioritization of roads to be cleared.	1-3 years	x		
Measure 3.3.1. Develop boat mooring requirements and pre-storm procedures.	2-5 years	x	x	x
Measure 3.3.2. Implement hurricane surge inundation ordinance.	2-5 years	x	x	
Measure 3.3.3. Ordinances or other mechanisms to direct development away from vulnerable areas (coastal bluffs, storm surge zones)	2-5 years		x	x

HAZARD – SEVERE STORMS (continued)		RESPONSIBLE PARTY		
MEASURE	**Timeframe**	**CCEMA**	**Local EMA's**	**Local Officials**
Measure 3.3.4. Upgrade and/or administer regulations to increase areas where underground utilities are required.	2-5 years	x	x	
Measure 3.4.1. Selection by municipal departments of tree types less susceptible to blow down and breakage	1-4 years	x	x	
Measure 3.4.2. Increased removal of limbs which can impact service lines.	1-5 years	x		
Measure 3.4.3. Training program for public works employees to recognize tree maintenance needs and notify appropriate responsible party.	1-3 years	x		x

HAZARD – WILDFIRES		RESPONSIBLE PARTY		
MEASURE	**Timeframe**	**CCEMA**	**Local EMA's**	**Local Officials**
Measure 4.1.1. Educate the public on the dangers of wildfires.	1-3 years	x	x	
Measure 4.1.2. Educate property owners on tactics to protect their structures from wildfires.	2-5 years	x	x	
Measure 4.3.4. Train all firefighters in wildland firefighting techniques and safety procedures.	2-5 years		x	
Measure 4.2.1. Develop warning and evacuation plans.	2-5 years	x	x	
Measure 4.4.1. Implement wildfire property protection measures for all critical facilities (buffers, fireproof roofing and siding, etc.).	2-10 years		x	
Measure 4.3.1. Develop land use ordinances requiring buffers between structures and forest species susceptible to drought and/or highly flammable.	3-5 years			x
Measure 4.3.2. Encourage or require slash reduction through good forestry practices.	2-4 years		x	x
Measure 4.3.3. Complete a detailed GIS study of fuel models, topography, fire weather and structures.	5-10 years		x	x

IDENTIFICATION AND ANALYSIS OF MITIGATION ACTIONS (CONTINUED)

Requirement §201.6(c)(3)(ii):	[The mitigation strategy] must also address the jurisdiction's participation in the National Food Insurance Program (NFIP), and continued compliance with NFIP requirements, as appropriate.

Requirement §201.6(c)(3)(iii):	[The mitigation strategy shall include] an action plan describing how the actions identified in section (c)(3)(ii) will be prioritized, implemented, and administered by the local jurisdictions. Prioritization shall include a special emphasis on the extent to which benefits are maximized according to a cost benefit review of the proposed projects and their associated costs.

Requirement §201.6(c)(3)(iv):	For multi-jurisdictional plans, there must be identifiable action items specific to the jurisdiction requesting FEMA approval or credit of the plan.

Currently, all 28 communities within Cumberland County participate in the National Flood Insurance Program (NFIP). Their continued compliance with the program is encouraged at all levels of the County's mitigation strategy. The CCHMP contains a variety of mitigation measures. Some of these are most appropriately and efficiently implemented or coordinated by the Cumberland County Emergency Management Agency, while others are more appropriate to be initiated and implemented at the municipal level, either by the local Emergency Management Agency or by the governing body or staff of the municipality.

The list of local projects contained in the following table was developed and prioritized separately by each municipality. Identification of projects was begun with a review of the 2005 HMP project list for each community (Appendix B). Projects were chosen based on local knowledge of the frequency and extent of local damages, local knowledge of which projects were of the highest priority (based on frequency and severity of damages), local knowledge of weather, the geography and topography of the community, and the technical and financial abilities of their respective communities to address hazards and mitigate the impacts of hazards.

However, many of the municipalities in Cumberland County are small towns that do not have the resources, staff or funding to prepare cost benefit analyses for their proposed projects. However, in virtually all cases involving expenditure of local funds for implementation, there will be a very rigorous, line-by-line analysis of cost effectiveness during the budget review process and subsequent public discussion through regular and special meetings. This review is at least equal to a formal benefit-cost calculation because each expenditure item will be scrutinized rather than simply plugged into a formula. Furthermore, MEMA and CCEMA have made it clear to local officials that a formal cost-benefit analysis will have to be prepared in the event they apply for mitigation funding.

The list of projects contained in the table below is largely the result of Cumberland County EMA's collaboration with local EMA's officials to first review and update their hazard mitigation project lists, and secondly, to continue their ongoing efforts to map specific locations that require mitigation. The project list was further refined through FEMA's contact with individual municipalities in the County. Mr. James Bruni met with each municipality and together with Town/City officials finalized the project list provided below. The table includes project data relevant to its identification/location, its prioritization, its cost and the timeframe estimated to complete, and the responsible agency.

Status information for the projects is provided as New, Deferred or Completed with Town Funds. The status column also identifies if FEMA funds were used for the project. The projects listed as deferred were carried over from the 2005 HMP. The reason for deferred status is noted below. Projects that have been completed and listed in the 2005 HMP are included at the end of Appendix B.

Municipality	Project (in priority order)	2010 Costs	Timeline	Responsible Agency	Status
Baldwin	1) Brown Rd; Elevate road 925' x 21' x 3' add 24'' x 40' N-12 culvert and stabilize shoulders.	$56,000	3 weeks	Road Commissioner	New project
	2) Saddleback West Rd.; Remove trees from ditch line 3,500' add ditch 650' add 24'' x 40' N-12 cross culvert.	$9,000	2 weeks	Road Commissioner	New project
	3) Anderson Rd; Add (2) 18'' x 40' N-12 culverts and riprap inlet and outlet.	$6,000	2 weeks	Road Commissioner	New project
	4) Senator Black Rd; Ditch 150' and upsize existing culverts.		2 weeks	Road Commissioner	Completed with Town funds
Bridgton	1) Post Office Square; Upsize existing 48'' x 50' culvert with 4' x 10' x 50' bottomless box culvert to match culvert under US 302.	$95,000	1 month	Road Commissioner	New project
	2) Mountain Rd; Upsize existing triple culverts with 4' x 10' x 40' bottomless box culvert and riprap inlet and outlet.	$45,000	2 weeks	Road Commissioner	New project
Brunswick	1) Bull Rock Rd; Ditch and armor 400' add (2) 15'' x 40' N-12 driveway culverts & an 18'' x 40' N-12 cross culvert riprap inlet and outlet.	$8,000	3 weeks	Director of Public Works	New project
	2) Pleasant Hill Rd; Upsize twin 5' x 66' culverts w/ 12' x 6' x 70' bottomless box culvert w/ integrated headwalls.	$85,000	3 weeks	Director of Public Works	New project
	3) Collins Brook Rd; Upsize existing 6' x 40' culvert with 8' x 5' x40' bottomless box culvert and riprap inlet and outlet.	$45,000	3 weeks	Director of Public Works	New project
	4) Highland Rd. Upsize existing 24'' x 40' culvert with 36'' x40' N-12 culvert and riprap inlet and outlet.	$5,000	2 weeks	Director of Public Works	New project
Cape Elizabeth	1) Kettle Cove Rd. @ Crescent Beach; Rebuild road substructure/retaining wall.	$500,000	unknown	Director of Public Works	Deferred: lack of municipal funds
	2) Garden Circle; Install pump system with vault and backup generator to remove ponding.	$250,000	3 weeks	Director of Public Works	New project
	3) Oakhurst Rd; Upsize 200' underground drainage, add two catch basins and re-landscape private property.	$250,000	3 weeks	Director of Public Works	New project
	4) Sawyer St..; Elevate 600' x 22' x 18'' add (3) 18'' x 40' N-12 cross culverts, stabilize shoulders and repave.	$95,000	1 month	Director of PW; Joint Project Scarborough	New project
	5) Spurwink Ave @ Spurwink River; Extend arch culvert.	unknown	unknown	Director of Public Works	Completed with Town funds

Municipality	Project (in priority order)	2010 Costs	Timeline	Responsible Agency	Status
Cape Elizabeth (continued)	6) Sawyer St. @ Trout Brook; upsize existing culvert with metal arch.	$175,000	3 weeks	Director of Public Works	Completed with Town funds
	7) Scott Dyer Rd./ Elizabeth Park: Enlarge stormwater discharge outfall pipe.	unknown	unknown	Director of Public Works	Completed with Town funds
	8) Running Tide Rd; Sewer Rehabilitation project.	unknown	unknown	Director of Public Works	Completed with Town funds
	9) Old Ocean House Rd. @ Alewife Brook: Culvert Upgrade.	unknown	unknown	Director of Public Works	Completed with Town funds
	10) Spurwink Ave@ Trout Brook; Upsize existing culvert with metal arch culvert.	$85,000	3 weeks	Director of Public Works	Completed with Town funds
Casco	1) Edwards Rd Site #1; Elevate Road 300' x 2' x 21' upsize 36'' x 40' corrugated metal pipe with 4' x 10' x 40' bottomless box culvert, repave and stabilize shoulders.	$65,000	3 weeks	Road Commissioner	New project
	2) Edwards Rd Site #2; Upsize existing 24'' x 40' corrugated metal pipe with 36'' x 40' N-12 culvert riprap outlet.	$5,000	2 weeks	Road Commissioner	New project
	3) Edwards Rd Site #3; Riprap existing culvert.	$1,000	1 day	Road Commissioner	New project
	4) Point Sebago Rd. Site #1; Add 24'' x 40' N-12 cross culvert, ditch and line 200' and repave.	$4,000	1 week	Road Commissioner	New project
	5) Point Sebago Rd. Site #2; Riprap inlet and outlet of existing culvert.	$1,000	1 day	Road Commissioner	New project
	6) Johnson Hill Rd; Ditch and line 2,000', install check dams and upsize (4) 15'' x 24' culverts w/ (4) 18'' x 32' N-12 culverts.	$23,000	2 weeks	Road Commissioner	New project
	7) Libby Rd; Elevate 200' x 21' x 2' stabilize shoulder and repave.	$18,000	3 weeks	Road Commissioner	New project
	8) Leach Rd; Upsize existing cross culvert with 6'x 4' x 40' box culvert.	$35,000	2 weeks	Road Commissioner	New project
	9) Crooked River Corridor; Acquire and/or elevate 12 houses.	$1,200,000-3,500,000	6 months	Town Manager	Deferred: Lack of funds/needs more study
	10) Hillside Ave. @ Old RT 302; Remove existing bridge.	$125,000	2 weeks	Road Commissioner	New project
	11) Town wide; Remove dead trees from public right of ways.	unknown	2011 - 2015	Town Manager	Deleted – Maintenance issue

Municipality	Project (in priority order)	2010 Costs	Timeline	Responsible Agency	Status
Chebeague Island	1) Central Landing; Upsize existing 12'' x 150' corrugated metal pipe with 18'' x 150' N-12 culvert and install boat landing concrete blocks 12' x 30' x 12''.	$34,000	4 weeks	Town Manager	New Project
	2) Indian Point Rd; Install sheet pile 500' x 10'.	$14,000	4 weeks	Road Commissioner	New project
	3) South Shore Drive/Colman Cove; Install geotextile fabric and riprap on embankment 400' x 15' x 2' on average.	$14,000	3 weeks	Road Commissioner	New project
	4) Chandlers Cove; Install geotextile fabric 75' x 15' and add crushed stone 75' x 15' x 2'.	$7,800	2 weeks	Road Commissioner	New project
	5) Ongoing public education of homeowners about protection from wildfires.	$500	2011 - 2015	Fire Department & Island Institute Fellow.	New project
Cumberland	1) Tuttle Rd Site 1; Upsize existing 36'' x 40' culvert with 48'' x 40' N-12 culvert and riprap inlet and outlet.	$14,000	2 weeks	Director of Public Works	New project
	2) Tuttle Rd Site 2; Elevate 200' x 21' x 3' stabilize shoulders and repave.	$18,000	3 weeks	Director of Public Works	Deferred: Lack of municipal funds
	3) Middle Rd @ Hazeltines; Upsize existing 36'' x 50' lined culvert with 42'' x 50' N-12 culvert and riprap inlet and outlet.	$17,000	2 weeks	Director of Public Works	Deferred: Lack of municipal funds
	4) Birch Ln.; Install underground drainage 18'' x 1000' add (6) catch basins and repave.	$70,000	1 month	Director of Public Works	Deferred: Lack of municipal funds
	5) Greely Rd; Upsize existing culvert and raise road.	$200,000	unknown	Director of Public Works	Deferred: Lack of municipal funds
	6) Harris Rd; Upsize existing culvert with box and elevate road.	$200,000	unknown	Director of Public Works	Completed with FEMA/ Town funds
	7) Range Rd. (5) sites Upsize culverts and improve inlet and outlets.	$50,000	1 year	Director of Public Works	Completed with Town funds
Falmouth	1) Northbrook Drive; Upsize existing 48" culvert with 8' x 4' x 70' bottomless box culvert and riprap inlet and outlet	$125,000	2 weeks	Director of Public Works	New Project
	2) Middle Rd. @ Scittery Gussett Brook; Upsize triple 15" culverts with 48" N-12 or as required by H&H study and riprap inlet and outlet.	$18,000	2 weeks	Director of Public Works	Deferred: Need study but lack of municipal funds
	3) Shoreline Drive Coastal Erosion; Stabilize bank 100' x 50' x 3' with large fractured stone	$65,000	2 weeks	Director of Public Works	Deferred – Need study, lack of funds

Municipality	Project (in priority order)	2010 Costs	Timeline	Responsible Agency	Status
Falmouth (continued)	4) Woodville Road Piscataqua River Crossing; upsize double culvert with bridge or box culvert	$500,000	Unknown	Director of Public Works	Completed with Town funds
	5) Woodville Rd @ High School; upsize existing culverts	$50,000	1 week	Director of Public Works	Completed with Town funds
Freeport	1) Richards Lane; Elevate 150' x 1' x 22' stabilize shoulders upsize twin 15'' x 40' culverts with 6' x 3' x 40' bottomless box and riprap inlet and outlet.	$40,000	2 weeks	Director of Public Works	New project
	2) Grant Rd; Upsize existing culvert with 24'' x 40' N-12 culvert.	$4,000	3 days	Director of Public Works	New project
	3) Webster/Old County Rd; Install 36'' x 50' N-12 culvert and riprap inlet and outlet.	$5,000	1 week	Director of Public Works	New project
	4) Flying Point Rd; Enlarge existing corrugated metal pipe. Add additional culvert and elevate road and repave.	$200,000-500,000	1 week	Director of Public Works	Completed with Town funds
	5) Cheehawk Rd; Added additional 18'' x 40' N-12 culvert.	$2,500	3 days	Director of Public Works	Completed with Town funds
Frye Island	1) Erosion at beach #6; Installed retention pond and added (2) culverts to divert flow from beach.	$10,000	2 weeks	Town Manager	Completed with Town funds
Gorham	1) Mitchell Hill Rd; Elevate road 300' x 3' x 22' stabilize shoulders and upsize existing culvert with bridge approx. 100' x 22' with wing walls.	$600,000	2 months	Director of Public Works; Joint project with Scarborough	Deferred – Lack of municipal funds
	2) Dingley Springs Rd.; Upsize existing multiple culverts with 12' x 6 x 40' bottomless box culvert and riprap inlet and outlets.	$55,000	2 weeks	Director of Public Works	Deferred – Lack of municipal funds
	3) Woods Rd; Upsize existing multiple culverts with 12' x 6 x 40' bottomless box culvert and riprap inlet and outlets.	$55,000	2 weeks	Director of Public Works	Deferred – Lack of municipal funds
	4) Wilson Rd: Upsize existing culvert with 10' x 5 x 40' bottomless box culvert and riprap inlet and outlets.	$45,000	2 weeks	Director of Public Works	New project
	5) Buck St; Upsize existing multiple culverts with 20'x 8' x 40' bottomless box culvert and riprap inlet and outlets. Elevate road 200' x 21' x 3' and repave.	$85,000	3 weeks	Director of Public Works	Deferred– Lack of municipal funds
	6) Spiller Rd; Upsize existing multiple culverts with 20'x 8' x 40' bottomless box culvert and riprap inlet and outlets. Elevate road 200' x 21' x 3' and repave.	$85,000	3 weeks	Director of Public Works	New project

Municipality	Project (in priority order)	2010 Costs	Timeline	Responsible Agency	Status
Gorham (continued)	7) New Portland Rd; Upsize existing multiple culverts with 10' x 5' x 40' bottomless box culvert and riprap inlet and outlets.	$45,000	3 weeks	Director of Public Works	Deferred – Lack of municipal funds
	8) Huston Rd; Upsize existing multiple culverts with 20'x 8' x 40' bottomless box culvert and riprap inlet and outlets.	$75,000	2 weeks	Director of Public Works	Completed with Town funds
	9) Tow Path Rd; Slope protection, upsize culvert.	$20,000	2 weeks	Director of Public Works	Completed with Town funds
	10) North Gorham Rd; Slope protection, upsize culvert.	$20,000	2 weeks	Director of Public Works	Completed with Town funds
	11) Hodgdon Rd @ South Branch Brook; Install metal arch pipe.	$200,000	1 month	Director of Public Works	Completed with FEMA funds
	12) Washburn Rd; Slope protection, upsize culvert.	$20,000	2 weeks	Director of Public Works	Completed with FEMA funds
	13) Longfellow Rd @ Indian Camp Brook; Slope protection, upsize culvert.	$20,000	2 weeks	Director of Public Works	Completed with Town funds
	14) Day Rd @ Indian Camp Brook; Slope protection, upsize culvert.	$20,000	2 weeks	Director of Public Works	Completed with Town funds
	15) Weeks Rd @ Gully Brook; Slope protection, upsize culvert.	$20,000	2 weeks	Director of Public Works	Completed with Town funds
	16) Plummer Rd @ Westcott Brook; Slope protection, upsize culvert.	$20,000	2 weeks	Director of Public Works	Completed with Town funds
	17) New Portland Rd. @ East Branch of Indian Brook; Slope protection, upsize culvert.	$20,000	2 weeks	Director of Public Works	Completed with Town funds
	18) Flaggy Meadow Rd. @ Little River; Slope protection, upsize culvert.	$20,000	2 weeks	Director of Public Works	Completed with Town funds
	19) Brackett Rd.; Slope protection, upsize culvert.	$20,000	2 weeks	Director of Public Works	Completed with Town funds
	20) Files Road @ Files Brook; Scour protection.	$20,000	2 weeks	Director of Public Works	Completed with Town funds
	21) Brackett Rd @ Indian Brook; Additional scour protection and redesign bridge.	$200,000	unknown	Director of Public Works	Completed with Town funds
	22) Fort Hill Rd@ Tannery Brook; Additional scour protection and redesign bridge.	$200,000	unknown	Director of Public Works	Completed with Town funds

Municipality	Project (in priority order)	2010 Costs	Timeline	Responsible Agency	Status
Gorham (continued)	23) Deering Rd @ Stroutwater River; Slope protection, upsize culvert.	$20,000	2 weeks	Director of Public Works	Completed with Town funds
	24) Hurricane Rd; Slope protection and upsize culvert.	$20,000	Unknown	Director of Public Works	Completed with FEMA funds
Gray	1) Westwood Rd at Sucker Brook; Upsize existing 36'' x 40' culvert with 6' x 8' x 40' bottomless box culvert with integrated wing walls.	$120,000	3 weeks	Director of Public Works	New project
	2) Lawrence Rd; Elevate road 22' x 700' x 4' on average, raise bridge deck, stabilize shoulders and repave.	$150,000	2 months	Director of Public Works	New project
	3) Campbell Shores Rd Site #1; Upsize triple 24'' x 40' culvert with 4' x 8' x 40' bottomless box culvert raise road 21' x 3' x 500' and repave.	$60,000	4 weeks	Director of Public Works	New project
	4) Campbell Shores Rd Site #2; ;Upsize triple 24'' x 40' culvert with 4' x 8' x 40' bottomless box culvert raise road 21' x 3' x 500' and repave.	$60,000	4 weeks	Director of Public Works	New project
	5) Long Hill Rd.; Upsize 60'' x 40' culvert with 5' x 8' x 40' bottomless box culvert, raise road 21' x 6' x 500' stabilize shoulders and repave.	$70,000	4 weeks	Director of Public Works	New project
Harpswell	1) Bethel Point Rd.; Replace existing 8' x 40' culvert with same sized culvert.	$50,000	3 weeks	Road Commissioner	New project/ Maintenance issue
Harrison	1) Buck Rd; Remove ledge in ditch line 300', continue berm along road and upsize existing twin culverts with 36'' x 40' N-12 culvert.	$9,000	3 weeks	Road Commissioner	New project
	2) Fog Rd.; Upsize existing twin 36'' x 40' cross culvert with 8' x 4' x 40' box culvert riprap inlet and outlet.	$45,000	3 weeks	Road Commissioner	New project
Long Island	1) Beach Ave; Remove ledge 50' x 6' x 2' Ditch and line 200' add 12'' x 30' N-12 driveway culvert.	$8,000	2 weeks	Road Commissioner	New Project
	2) Harbor De Grace St; Upsize 12'' x 80' culvert with 15'' x 80' N-12 culvert, remove ledge 30' x 6' x 2' and ditch 50'.	$8,500	3 weeks	Road Commissioner	New Project
	3) 765 Island Ave; Extend existing 24'' x 50' culvert with 24'' x 60' N-12 culvert and stabilize outlet with riprap.	$5,000	2 weeks	Road Commissioner	New project
	4) Island Ave. & Garfield St; Install catch basin, add 18'' x 40' N-12 culvert and upsize 15'' x 40' culvert with 18'' x 40' N-12 culvert. Ditch and armor 700' and shim 800' of road.	$12,000	3 weeks	Road Commissioner	New project

Municipality	Project (in priority order)	2010 Costs	Timeline	Responsible Agency	Status
Long Island (continued)	5) Island Ave; Stabilize bank with riprap and native plantings 400' x 60' x 2'.	10,000	3 weeks	Road Commissioner	New project
	6) Levitt Street/ Public Works Yard; Excavate wet spot in road install 12' x 30' filter fabric and crushed stone pillow.	$8,000	3 weeks	Road Commissioner	Completed with Town funds
	7) Island Ave @ Stepping Stone Ln.; Install 12'' x 40 N-12 culvert and re-establish ditch line.	$9,000	2 weeks	Road Commissioner	Completed with Town funds
	8) Apple Tree Ln.; Upsize existing cross culvert add (2) driveway culverts and (1) catch basin clean ditches and add check dams.	$5,000	3 weeks	Road Commissioner	Completed with Town and PA funds
Naples	1) Wiley Rd; Upsize 24'' x 40' corrugated metal pipe with 30'' x 40' N-12 culvert and repave.	$3,500	1 week	Town Manager	New project
	2) Lambs Mill Rd; Remove road bed 200' x 21' x 12'' install french drain and geotextile fabric and repave.	$10,000	1 week	Town Manager	New project
	3) Horace Files Rd. @ Pikes Hill; Ditch 200' and build detention pond 10'x 10' x 6'.	$2,000	1 week	Town Manager	New project
	4) Sand Rd; Upsize existing culvert with 24'' x 40' N-12 culvert, remove catch basin and replace with stone lined plunge pool.	$5,000	1 week	Town Manager	New project
	5) Songo Rd; Ditch 2,500' and add 30'' x 40' N-12 culvert.	$11,000	2 weeks	Town Manager	New project
	6) Wiley Rd @ Sam's Bluff; Upsize existing 30'' x 40' corrugated metal pipe with 36'' x 40' N-12 culvert and riprap inlet and outlet.	$8,000	1 week	Town Manager	New project
New Gloucester	1) Ayers Rd; Upsize multiple culverts with (1) 3' x 8' x 40' bottomless box culvert and (1) 3' x 10' x 40' bottomless box culvert, elevate road 300' x 21' x 2' and stabilize shoulders riprap and repave.	$95,000	1 month	Director of Public Works	New project
	2) Woodman Rd; Upsize multiple culverts with 3' x 8' x 40' bottomless box culvert, elevate road 600' x 21' x 2' and stabilize shoulders riprap and repave.	$60,000	1 month	Director of Public Works	Deferred – Lack of municipal funds
	3) Durham Rd; Upsize multiple culverts with 3’ x 8’ x 40’ bottomless box culvert, elevate road 600’ x 21’ x 2’ and stabilize shoulders riprap and repave.	$60,000	1 month	Director of Public Works	New project

Municipality	Project (in priority order)	2010 Costs	Timeline	Responsible Agency	Status
North Yarmouth	1) Mill Rd; Upsize existing culvert with 48'' x 40' N-12 culvert riprap inlet and outlet, repave.	$20,000	2 weeks	Road Commissioner	New project
	2) West Pownal Rd; Elevate Rd	$85,000	3 weeks	Road Commissioner	New project
Portland	1) Johanson and Front St; Park Side Condos acquisition and demolition of six unit condo complex.	1,000,000-2,000,000	6 months	City Council	New project
	2) Washington Ave. @ Leister Dr; Upsize, realign and lower outlet 36'' x 150' corrugated metal pipe with 48'' x 150' N-12 culvert and install plunge pool.	$50,000	3 weeks	Director of Public Works	New project
	3) Oakdale, Williams and Dartmouth St.; Add 4,500' x 15'' underground drainage and six catch basins and repave.	$150,000	2 months	Director of Public Works	New project
	4) Back Cove @ Tukeys Bridge; Stabilize bank along back cove 100' x 90' x 3' using one ton fractured stone and flat revetments in the water up to 5' above mean high tide.	$180,000	2 months	Director of Public Works	New project
	5) Back Cove @ Dartmouth St; Stabilize bank erosion along walking trail 6'x 150' x 2' using 500 lb. fracture stone riprap.	$8,000	1 week	Director of Public Works	New project
	6) Gertrude St. Install backflow prevention.	$500,000	Unknown	Director of Public Works	Deferred-Completion expected in 2011
	7) Capisic St.; Install backflow prevention.	$500,000	Unknown	Director of Public Works	Deferred – Lack of funds pos. stormwater issue
	8) West end Commercial St; Upgrade drainage.	$500,000	Unknown	Director of Public Works	Completed with City funds
	9) Alden and Violette St; Upsize culverts, build detention pond upstream and install backflow valves.	$1,000,000	Unknown	Director of Public Works	Completed with City funds
	10) Alden @ Violette Circle; Upsize Lucas St culvert, build detention ponds upstream and install backflow preventers.	$1,000,000	Unknown	Director of Public Works	Completed with City funds
	11) Mona/Bernard/Washington/Maine Ave. @ Falls Brook; Easement acquisition, culvert upgrades and stream channel work.	$8,000,000	Unknown	Director of Public Works	Completed with City funds
	12) West end of Commercial St; Upgrade storm water system.	$1,000,000	Unknown	Director of Public Works	Completed with City funds
Portland Water District	1) East End Commercial St; ID all pipes along Waterfront and install backflow preventers.	Unknown	Unknown	Portland Water District	New project

Municipality	Project (in priority order)	2010 Costs	Timeline	Responsible Agency	Status
Pownal	1) Chadsey Rd Site #1 Upstream; Upsize triple N-12 culverts with 12' x 4' x 40' bottomless box culvert and riprap inlet and outlets.	$45,000	3 weeks	Road Commissioner	New project
	2) Chadsey Rd Site #2; Upsize triple N-12 culverts with 12' x 4' x 40' bottomless box culvert and riprap inlet and outlets.	$45,000	3 weeks	Road Commissioner	New project
	3) Brown Rd; Upsize twin 48'' x 40' culverts with 12' x 4' x 40' bottomless box culvert, riprap inlet and outlets and repave.	$48,000	3 weeks	Road Commissioner	New project
Raymond	1) Plains Road at Route 85 & Crescent Beach; Install closed drain and catch basin	$50,000 - $200,000	3 weeks	Director of Public Works	Deferred – Lack of municipal funds
	2) Mountain Rd from Spiller Hill to McDermott Drive; Upsize culvert and armor ditch.	$20,000 - $50,000	2 Weeks	Director of Public Works	Completed with Town funds
	3) Elizabeth Ave. from Route 302 to Pine Road	Unknown	Unknown	MDOT	Completed with State funds
Scarborough	1) Broadturn Rd & Martin Ave; Upsize existing twin 36'' x 40' corrugated metal pipes with 10' x 4' x 40' bottomless box culvert and add 36'' x 40' N-12 culvert on Martin Ave.	$65,000	3 weeks	Director of Public Works	New project
	2) Mitchell Hill Rd; Elevate road 300' x 3' x 22' stabilize shoulders and upsize existing culvert with bridge approx.. 100' x 22' with wing walls.	$600,000	3 weeks	Director of Public Works; Joint project with Gorham	New project
	3) Sawyer St.; Elevate 600' x 22' x 18'' add (3) 18'' x 40' N-12 cross culverts, stabilize shoulders and repave.	$95,000	2 months	Director of Public Works; Joint project with Cape Elizabeth	Deferred – Lack of funds pos. joint project w/ Cape E.
	4) Pleasant Hill Subdivision @ Gunstock Rd; Upgrade storm drain system.	$600,000	18 months	Director of Public Works	In progress-Completion
	5) Higgins Beach along Bay View Dr; shoreline erosion. Install plantings/storm breaks.	$75,000	3 weeks	Director of Public Works	Completed with FEMA/ Town funds. Still Issues.
	6) Higgins beach between Cliff and Shell St; Upgrade storm drain system.	$100,000	Unknown	Director of Public Works	Completed with Town funds
	7) Clay Pitts Rd; Armor river banks with riprap	$7,500	3 weeks	Director of Public Works	Completed with FEMA/ Town funds

Municipality	Project (in priority order)	2010 Costs	Timeline	Responsible Agency	Status
Sebago	1) Peabody Pond Rd. Ditch and line 1,800' add (2) driveway culverts 15'' X 30' and (1) cross culvert 15'' x 40' remove ledge from ditch line.	$28,000	2 weeks	Road Commissioner	New project
	2) River Rd; Elevate and reconstruct road replace 18'' x 40' culverts with 24'' x 40' N-12 culverts.	$50,000	3 weeks	Road Commissioner	New Project Work started 7/2010
	3) Hancock Pond Rd; Upsize culvert and elevate road and add ditches.	$10,000	3 weeks	Road Commissioner	New Project
	4) Winn Mountain Rd; Ditch 500'.	$2,000	1 week	Road Commissioner	New project
	5) Dyke Mountain Rd; Ditch and pave road.	$67,000	1 week	Road Commissioner	Completed with Town funds
	6) Orchard Rd; Ditching and install 140' of culverts.	$8,000	1 week	Road Commissioner	Completed with Town funds
South Portland	1) Fessenden St @ Trout Brook; Upsize existing twin 36'' x 50' culvert with 3' x 8' x 50' bottomless box culvert and riprap inlet and outlet.	$65,000	2 weeks	Director of Public Works	Deferred until more funds are available – Needs more study
	2) Alfred St; Upsize existing twin 24'' x 40' culvert with 3' x 6' x 50' bottomless box culvert and riprap inlet and outlet.	$55,000	2 weeks	Director of Public Works	New project
	3) Boothby St @ Trout Brook; Upsize existing culvert with 3' x 6' x 50' bottomless box culvert and riprap inlet and outlet.	$55,000	2 weeks	Director of Public Works	Deferred until more funds are available – Needs more study
	4) Running Hill Rd; Install catch basin.	$25,000	3 days	Director of Public Works	Deferred until more funds are available – Needs more study
	5) Broadway @ Daytona; Relocate Basin	$50,000	unknown	Director of Public Works	Completed with City funds
	6) Highland Av @ High school; Upgrade storm drain system.	$130,000	unknown	Director of Public Works	Completed with City funds
	7) Main St @ Massachusetts and Main @ Wallace Ave.; Road rehabilitation	Unknown	unknown	Director of Public Works	Completed with City funds
	8) Preble @ Alder and Day St; Add curb inlet.	$10,000	unknown	Director of Public Works	Completed with City funds
	9) Broadway @ Boys Club; New sidewalks and upgrade systems.	$50,000	unknown	Director of Public Works	Completed with City funds
	10) Highland Ave @ Whispering Pines; Upgrade storm drain system.	$100,000	unknown	Director of Public Works	Completed with City funds

Municipality	Project (in priority order)	2010 Costs	Timeline	Responsible Agency	Status
South Portland (continued)	11) Broadway @ underpass; Upgrade Storm drain system.	$100,000	unknown	Director of Public Works	Completed with City funds
	12) Dike Farm Rd @ Meadow Way; Upgrade storm drain system.	$50,000	unknown	Director of Public Works	Completed with City funds
	13) Nutter Rd; Upsize existing culvert.	$10,000	unknown	Director of Public Works	Completed with City funds
	14) Highland Ave @ Gamblers Brook; Upsize existing culvert.	$10,000	unknown	Director of Public Works	Completed with City funds
	15) Angell Ave. @ Preble St; Install curb inlets.	$50,000	unknown	Director of Public Works	Completed with City funds
	16) Cummings Rd @ Westbrook Line; Upgrade culverts.	N/A	unknown	Director of Public Works	Completed with City funds
	17) Broadway @ Scarborough Line; Upgrade Ditches.	N/A	unknown	Director of Public Works	Completed with City funds
	18) Rhode Island @ Dead End; maintain Inlet.	N/A	unknown	Director of Public Works	Maintenance Issue
	19) Willow St @ Sand pebbles condo's; Tidal effect	N/A	unknown	Director of Public Works	Completed with City funds
Standish	1) Blake Rd; Upsize existing twin culverts 36'' x 40' culverts with 8' x 4' x 40' bottomless box and riprap inlet and outlet.	$45,000	2 week	Director of Public Works	Deferred until more funds are available – Needs more study
	2) Middle Jam Rd; Install precast head wall with wing walls on inlet and outlet of 40'' culvert.	$10,000	2 week	Director of Public Works	New project
	3) Northeast Rd @ Rt. 35; Ditch and armor 300' add 30'' x 30' N-12 driveway culvert.	$7,000	2 week	Director of Public Works	New Project
	4) Cape Rd; Upsize existing 30'' x 40' corrugated metal pipe with 36'' x 40' N-12 culvert and riprap inlet and outlet.	$5,000	2 week	Director of Public Works	Deferred until more funds are available – Needs more study
	5) Route 35A - Cape Road; upsize culvert, create spillway, armor downstream side of road bed.	$50,000	Unknown	Director of Public Works	Deferred until more funds are available – Needs more study
	6) White Bridge Rd; Upsize existing culvert and create spillway and armor downstream side of road.	$ 50,000-200,000	3 weeks	Director of Public Works	Completed with Town funds
Westbrook	1) Pumping Station @ Spring St; Add second floor to existing 32' x 25' pump station and relocate machinery and electronics to second floor.	$600,000	3 months	Wastewater Division Manager	New project

Municipality	Project (in priority order)	2010 Costs	Timeline	Responsible Agency	Status
Westbrook (continued)	2) Brook St @ Minnow Brook; Install 42'' x 40' N-12 overflow culvert on abandoned road north of Brook St.	$10,000	2 weeks	Director of Public Works	New project
	3) # 169 Brook St @ Minnow Brook; Install 42'' x 40' N-12 overflow culvert on abandoned road north of Brook St.	$10,000	2 weeks	Director of Public Works	New project
	4) Cumberland St; Upsize existing twin culverts.	Unknown	Unknown	Director of Public Works	Completed with City funds
	5) River Walk @ Ash St; Stabilize bank with 12'' riprap.	$5,000	3 Days	Director of Public Works	Completed with City funds
Windham	1) Highland Cliff Rd @ Annie Leighton Brook: Upsize existing culvert with a 8' x 4' x 40' bottomless box culvert and riprap inlet and outlet.	$45,000	2 weeks	Director of Public Works	Deferred until more funds are available – Needs more study
	2) Anderson Rd. near Westbrook City Line; Upsize existing culvert.		3 weeks	Director of Public Works	New project
	3) Highland Cliff Rd; Upsize existing culvert.	$50,000	2 weeks	Director of Public Works	Deferred until more funds are available – Needs more study
	4) Highland Cliff/Lincoln Weeks Rd; Upsize existing culvert.	$50,000	2 weeks	Director of Public Works	Deferred until more funds are available – Needs more study
	5) Nash Rd; Elevate road 1,200’ x 21’ x 2’ stabilize shoulders add 24’’ x 40’ N-12 cross culvert and repave.	$74,000	3 weeks	Director of Public Works	New project
Yarmouth	1) North Rd; Add 42’’ x 80’ N-12 overflow culvert at Pratt’s Brook.	$15,000	2 weeks	Director of Public Works	New project
	2) Ledge Rd; Install headwall and wing walls on inlet side of Pratt’s Brook.	$10,000	2 weeks	Director of Public Works	Deferred – Lack of Municipal funds
	3) Pratt's Brook @ Northwood Rd; Problem should be solved by adding overflow culvert @ North Rd.	N/A	N/A	Director of Public Works	New project
	4) Pratt's Brook @ East Elm St; Problem should be solved by adding overflow culvert @ North Rd.	N/A	N/A	Director of Public Works	New project

SECTION VI – PLAN MAINTENANCE PROCESS

MONITORING, EVALUATING AND UPDATING THE PLAN

Requirement §201.6(c)(4)(i):	[The plan maintenance process shall include a] section describing the method and schedule of monitoring, evaluating, and updating the mitigation plan within a five-year cycle.

Monitoring the Plan. Monitoring of the Plan will be conducted by the Cumberland County Emergency Management Agency (CCEMA) and the local Emergency Management Agency Directors. Each will play lead roles in monitoring and evaluating the implementation of the hazard mitigation plan. CCEMA will collect information on an annual basis from the local EMA Directors to assess progress on the mitigation goals and objectives. CCEMA also will host regular meetings of the County EMA Directors at which issues relating to the implementation of the plan will be addressed.

Evaluating and Updating the Plan. At the beginning of the fourth year, CCEMA initiated a process to assess the implementation of the plan including a re-evaluation of the hazard analysis and the mitigation measures. This process involved the local EMA Directors, who served as liaisons to other municipal staff and officials. Based on the information collected and an analysis of that information, proposed changes to the plan have been made for the first five year period and submitted to the Maine Emergency Management Agency and Federal Emergency Management Agency. This process will be repeated during the fourth year of implementation for each updated version of the Plan.

INCORPORATION INTO EXISTING PLANNING MECHANISMS

Requirement §201.6(c)(4)(ii):	[The plan shall include a] process by which local governments incorporate the requirements on the mitigation plan into other planning mechanisms such as comprehensive or capital improvement plans, when appropriate.

County government is very limited in scope and authority in the State of Maine and does not have the staff or fiscal capabilities to control planning or development within municipalities. In Maine, most government authority is derived from State statues and rules and with the municipal "home rule" ordinances.

It must be recognized that there is a variety of governance structures within Cumberland County. Some municipalities can adopt ordinances and other regulatory mechanisms by council or select board vote, while other municipalities must put such proposals to a town meeting vote of the general populace. In all cases, the need to educate the public as well as elected officials is paramount. It should be noted that education measures ranked at or near the top of the list in all hazard categories.

The Cumberland County Emergency Management Agency (CCEMA) will provide guidance to the local EMA Directors who will play the lead role in incorporating measures in the hazard mitigation plan into other planning mechanisms.

The municipalities used the following planning mechanisms to incorporate the mitigation strategy and other information contained in the 2005 HMP, where appropriate. Planning mechanisms at the municipal level include:

- Local Comprehensive Plans (Most of the municipalities have adopted a comprehensive plan);
- Emergency management and mitigation planning;
- Emergency Operations Plan (EOP);
- National Floodplain Information Plan (NFIP); and,
- Hazardous Materials Plan (HAZMAT).

2011 HMP Update Planning Mechanisms:

Municipality	Local Comprehensive Plan	Emergency Management& Mitigation	Emergency Operations Plan	National Floodplain Information Plan	Hazardous Materials Plan
Baldwin		X	X	X	X
Bridgton		X	X	X	X
Brunswick		X	X	X	X
Cape Elizabeth		X	X	X	X
Casco		X	X	X	X
Chebeague		X	X	X	X
Cumberland		X	X	X	X
Falmouth		X	X	X	X
Freeport		X	X	X	X
Frye Island		X	X	X	X
Gorham		X	X	X	X
Gray		X	X	X	X
Harpswell		X	X	X	X
Harrison		X	X	X	X
Long Island		X	X	X	X
Naples		X	X	X	X
New Gloucester		X	X	X	X
North Yarmouth		X	X	X	X
Portland		X	X	X	X
Pownal		X	X	X	X
Raymond		X	X	X	X
Scarborough		X	X	X	X
Sebago		X	X	X	X
South Portland		X	X	X	X
Standish		X	X	X	X
Westbrook		X	X	X	X
Windham		X	X	X	X
Yarmouth		X	X	X	X

All towns in Cumberland County hold annual town meetings which are an integral part of public planning. These meetings allow all citizens equal opportunity to communicate their concerns and opinions on the state of the town and how to move forward with these concerns. The citizens in attendance at these meetings have a vested interest in the town and how and what is funded annually. Through the municipal budget process and long-term planning based on the identified mitigation actions, towns will be better able to allocate funding for these projects to safeguard their communities.

Maine municipalities are required to update their comprehensive plans on a periodic basis. At the time of the updating of the comprehensive plan, mitigation goals and objectives can be introduced into the planning process. In addition, a municipality may choose to develop a specific hazard mitigation section in its comprehensive plan, which could be adopted on its own, even if an update of the comprehensive plan is not being done.

It will be the responsibility of the local EMA Directors to provide input into their communities' capital improvement plan processes.

Following approval of the Plan from FEMA, the County EMA will send a copy to all municipalities in the County with a recommendation that local comprehensive planning efforts, municipal road maintenance planning efforts, emergency management programs and local fire prevention programs be utilized to their greatest extent to complete the community's mitigation measures.

CCEMA will continue to provide assistance to communities, as it has done in the past, in the development of FEMA grant applications for the Pre-Disaster Mitigation, Hazard Mitigation Grant Program and other related grant programs.

The County EMA, and all municipal EMA's, have continued to advise their respective jurisdictions on pending hazard events, such as severe winter storms, as well as posted public service announcements in public locations such as municipal offices.

The County EMA has notified municipal EMA's and local officials of hazard mitigation workshops such as those related to the Pre-Disaster and Hazard mitigation Grant programs and workshops with hazard mitigation context such as those sponsored by Maine's Local Roads Center that deal with the use of geotextiles.

CONTINUED PUBLIC INVOLVEMENT

Requirement §201.6(c)(4)(iii):	[The plan maintenance process shall include a] discussion on how the community will continue public participation in the plan maintenance process.

Cumberland County is committed to involving the public directly in the continued reshaping and updating of the Hazard Mitigation Plan. CCEMA is responsible for reviewing and updating the plan. The opportunity for the public to comment on the HMP has been available, and will continue to be available, on the Cumberland County website.

Each municipality will receive a copy of the completed plan to keep on file at the municipal office. A notice will be posted at each municipal office advising the public of the availability of the plan for review. Municipalities with websites may choose to post the plan on the website. The original and draft updates have been posted on the CCEMA website during the updating process in order to encourage public comment on the plan during the draft stage. The website is as follows: http://www.cumberlandcounty.org/EMA/hmp_plans.htm.

Members of the public have been welcome to submit comments, suggestions or feedback on the plan to CCEMA. Each comment from the public was reviewed for possible inclusion in the final plan. CCEMA will continue its efforts to coordinate with volunteer community groups.

At the time of the initial five year review and update of the plan, and at subsequent updates, CCEMA will notify the public of the plan review and updating process and will invite public comment and participation in the process. To a large degree, this will be done through the use of the monthly regional meetings CCEMA holds with the local emergency management directors. Included as an agenda item will be the request for updates on the HMP from the meeting participants. This will serve to reinforcement the importance of the plan and encourage local directors to provide to their constituents information on the plan and the update process.

The address and phone number of the Cumberland County EMA office is:

Cumberland County Emergency Management Agency
22 High Street – Unit 1
Windham, ME 04062
207-892-6785
207-892-8617 (fax)

www.cumberlandcounty.org/EMA

APPENDIX A

MEETING AGENDAS, SIGN-IN SHEETS, LETTERS TO COMMUNITIES, ANNOUNCEMENTS & ARTICLES

County of Cumberland

EMERGENCY MANAGEMENT AGENCY
22 High Street Unit 1
Windham, Maine 04062

Telephone
(207) 892-6785

Fax
(207) 892-8617

17 Sep, 2010

From: James Budway
To: Municipal Officials

Subj: INFORMATION PAPER: 2010 CUMBERLAND COUNTY HAZARD MITIGATION PLAN UPDATE

As you might be aware, the update to the Cumberland County Hazard Mitigation Plan (HMP) is ongoing. The following is provided for your information. If you have questions, comments or concerns, please don't hesitate to contact either myself or Lori Roth at the Cumberland County Emergency Management Agency (CCEMA) by telephone phone at 892-6785 or by e-mail at budway@cumberlandcounty.org or roth@cumberlandcounty.org .

Hazard Mitigation is defined as any action taken to reduce or eliminate the long-term risk to human life and property from natural hazards. Local jurisdictions (Municipal or County, as appropriate) are required to have a HMP. In Maine, HMPs are maintained at the County level and incorporate all municipal mitigation considerations. The current Cumberland County HMP was completed in December, 2005.

Every five years the Federal Emergency Management Agency (FEMA) requires an update to local HMPs. As such, the CCEMA has contracted with the Cumberland County Soil and Water Conservation District to lead the effort. Each municipality in Cumberland County is required to participate in the process and to endorse the final product in order to gain FEMAs approval of the updated plan. With the approval comes renewed eligibility for all municipalities to compete for valuable mitigation grant funding.

The HMP update process began, in earnest, earlier this spring. A detailed review of the status of projects listed in the 2005 HMP was completed and consideration was given new mitigation projects for incorporation in the 2010 HMP update. Local EMA Directors were contacted by CCEMA to establish a meeting time with appropriate municipal officials to explain the plan update and to gather data supporting their mitigation projects. This data included photographs and historical supporting documentation such as newspaper articles, invoices, equipment and personnel logs, etc. Also, site visits to project locations were conducted and Geographical Information System (GIS) data was collected using a Global Relief Technologies (GRT) Personal Digital Assistant (PDA) provided by

the Maine Emergency Management Agency (MEMA). CCEMA is the only county in Maine using the GRT PDA for mapping and collection of field data for Hazard Mitigation Projects. To date, all of our 28 municipalities have participated in this process.

The data collection effort will greatly facilitate the completion of pre-disaster mitigation grant applications should municipalities decide to compete for grant funding. It will also provide important documentation to assist in the preparation of municipal capital improvement budgets. A summary of mitigation projects that may qualify for funding, either derived from or further refined with this data collection initiative, will be included in the 2010 HMP update.

Moving forward, CCEMA will continue collecting data on hazard events, such as large rain storms that produce flooding, and mapping specific locations that require mitigation. This should reduce the effort required by municipalities to track, update and record mitigation projects at the end of each five year planning period. Also, Public Works Directors have been provided with MEMA 2-D Damage “road tracker” forms to assist in the tracking of “history of damages”. Tracking hazard damage for mitigation projects is an important factor in the grant application process but generally proves to be difficult and time consuming to research. Utilizing “road tracker” forms can eliminate this difficulty by readily providing much of the history of repetitive damage needed when applying for these mitigation grants.

As previously noted, completion of this effort requires “adoption by the local governing body.” Therefore, the Cumberland County Commissioners and the Boards of Selectmen and the Councils of the 28 Incorporated Cities and Towns will be requested to adopt the 2010 Cumberland County Hazard Mitigation Plan prior to January, 2011. Adoption acknowledges that natural hazards create a risk of harm to persons and damage to property and that implementing certain measures may reduce the risk of harm to persons and damage to property resulting from these natural hazards.

The Draft 2010 Hazard Mitigation Plan can be viewed at the Cumberland County Website http://www.cumberlandcounty.org/EMA/hazard.htm Sections are being added to the site as they are completed. A link to a Feedback Form is provided for public comment.

I will be contacting you soon with the formal document for adoption.

Thank you,

Jim

County of Cumberland

EMERGENCY MANAGEMENT AGENCY

22 High Street Unit 1
Windham, Maine 04062

Telephone
(207) 892-6785

Fax
(207) 892-8617

July 6, 2010

Re: Hazard Mitigation Project

Hazard Mitigation is defined as any action taken to reduce or eliminate the long-term risk to human life and property from natural hazards. Local jurisdictions (Municipal or County, as appropriate) are required to have a Hazard Mitigation Plan (HMP). In Maine, HMPs are maintained at the County level and incorporate all municipal mitigation considerations. The current Cumberland County HMP was completed in December, 2005.

Every five years the Federal Emergency Management Agency (FEMA) requires an update to local HMPs. As such, the Cumberland County Emergency Management Agency (EMA) has contracted with the Cumberland County Soil and Water Conservation District to lead the effort. Each municipality in Cumberland County is required to participate in the process and to endorse the final product in order to gain FEMAs approval of the updated plan. With the approval comes renewed eligibility for all municipalities to compete for valuable mitigation grant funding.

The HMP update process began, in earnest, earlier this spring. A detailed review of the status of projects listed in the 2005 HMP is ongoing and consideration is being given to new mitigation projects for incorporation in the 2010 HMP update. Local EMA Directors have been contacted by Cumberland County EMA to establish a meeting time with appropriate municipal officials to explain the plan update and to gather data supporting their mitigation projects. This data includes photographs and historical supporting documentation such as newspaper articles, invoices, equipment and personnel logs, etc. Also, site visits to project locations are conducted and Geographical Information System (GIS) data is collected using a Global Relief Technologies (GRT) Personal Digital Assistant (PDA) provided by the Maine Emergency Management Agency (MEMA). Cumberland County EMA is the only county in Maine using the GRT PDA for mapping and collection of field data for Hazard Mitigation Projects. To date, approximately half of our municipalities have participated in this process and the remainder have scheduled meetings to take place in the near future.

The data collection effort is extremely important. It will greatly facilitate the completion of pre-disaster mitigation grant applications should municipalities decide to compete for grant funding and it will provide important documentation to assist in the preparation of municipal capital improvement budgets. A summary of mitigation projects, either derived from or further refined with this data collection initiative, will be included in the 2010 HMP update.

Moving forward, Cumberland County EMA will continue collecting data on hazard events, such as large rain storms that produce flooding, and mapping specific locations that require mitigation. This should reduce the effort required by municipalities to track, update and record mitigation projects at the end of each five year planning period. Also, Public Works Directors have been provided with MEMA D-2 Damage "road tracker" forms to assist in the tracking of "history of damages". Tracking hazard damage for mitigation projects is an important factor in the grant application process but generally proves to be difficult and time consuming to research. Utilizing "road tracker" forms can eliminate this difficulty by readily providing much of the history of repetitive damage needed when applying for these mitigation grants.

As previously noted, completion of this effort requires "adoption by the local governing body." Therefore, the Cumberland County Commissioners and the Boards of Selectmen and the Councils of the 28 Incorporated Cities and Towns will be requested to adopt the 2010 Cumberland County Hazard Mitigation Plan prior to January, 2011. Adoption acknowledges that natural hazards create a risk of harm to persons and damage to property and that implementing certain measures may reduce the risk of harm to persons and damage to property resulting from these natural hazards.

Lori J. Roth
Planner
Cumberland County Emergency Management Agency

County of Cumberland

EMERGENCY MANAGEMENT AGENCY
22 High Street Unit 1
Windham, Maine 04062

Local Emergency Management Agency
Director's Meeting

AGENDA
April 14, 2010
8:30 AM

Welcome & Introductions: Jim Budway, CCEMA Director

Presentation Topics:

Jim Budway- Ongoing Initiatives

- February Rain Storm- Disaster Declaration
- Hazard Mitigation Plan Update
- Hazard Mitigation Project Mapping
- Exercises
- Incident Management Assistance Team
- PODs
- H1N1 After action
- MOU's- New and existing/government and business

Eric Sawyer

- Overview of the Center for Domestic Preparedness

Anne-Marie Brett

- Debris Management

Other Announcements:

Next Meeting Date: May 12, 2010 @ 0830
Cumberland County EMA,
22 High St., Windham.

County of Cumberland

EMERGENCY MANAGEMENT AGENCY
22 High Street Unit 1
Windham, Maine 04062
(207) 892-6785

A meeting of the County of Cumberland's Local Emergency Manager's was held Wednesday, April 14, 2010 at 8:30 AM, at the CCEMA.

Outlined below is a summary of the major issues discussed at this meeting:

- **Welcome & Introductions**

Jim Budway- Director, Cumberland County Emergency Management Agency

Topics

Ongoing Initiatives - Jim Budway

- **Disaster Summary for FEMA 1891-DR**- Summary of the applicant's briefing, re: severe winter storm and flooding 23-Feb- 2 March, 2010
- **MEMA inquiry**- event between 11 and 31 March, 2010
- **H1N1**- Summary of After Action Review Submission by Jim Budway. Please contact Becca Matusovich (207) 797-3424, the Cumberland County Public Health Liaison is available to answer questions.
- **Hazard Mitigation Plan Update**- CCEMA has contracted with Cumberland County Soil and Water Conservation District to update the 2005 Hazard Mitigation Plan. Hazard Mitigation Project mapping has begun. Contact Lori Roth 207-892-6785 to schedule a time to meet, discuss and map your hazard mitigation projects.
- **Incident Management Assistance Team** (IMAT)- Two meetings have been conducted to date.
  -Three 10 man groups will be headed by three Regional Fire Chief's organizations (Coastal, Metro and Western) to recruit and fill Incident Command System and General Staff duties.
- **PODs**- C-POD sites within CC have been reviewed and validated; Draft Memorandums of Understand are being developed.
- **Exercises**- Tri-County Regional Wild Land Fire Table Top Exercise is scheduled for 24 April, 2010, at the Sacopee Valley Middle School in Hiram. The Jetport full scale exercise is scheduled for 5 June 2010. Contact David Feeney 207-892-6785 for more information.
- **Miscellaneous**- Special teams, Public Health "Preparedness" Committee

- **Questions:**

Please see the attached document, LDMP-26, for additional information about on-going initiatives or contact CCEMA (207) 892-6785 for more information on any of these programs!

Debris Management - Anne-Marie Brett

- Natural and man-made disasters generate a variety of debris. Anne-Marie's presentation and a link to forms and documentation concerning debris collection, disposal and costs can be found at: http://www.cumberlandcounty.org/EMA/ema_debris.htm

  If you have any problems accessing this information, or have questions concerning municipal debris management, please contact:
  Anne-Marie Brett (207) 892-6785

Center for Domestic Preparedness- Eric Sawyer

- Eric attended classes on WMD/All Hazards Incident Command and Hands on Training at the Center for Domestic Preparedness in Anniston, AL. His Presentation is attached (DHS-CDP Overview-Sawyer.pdf). Topics include:
  -Level B (SCBA) Field Triage and victim transport following a Chemical Release
  -Level C (respirator) with live nerve agents

❋ **Adjournment at 9:50 AM**

❋ **Next Meeting:** **Wednesday, May 12, 2009**
8:30am (0830 hours)
CCEMA, 22 High Street, Windham, Maine 04062

r/s
Lori J. Roth
Planner
CCEMA

County of Cumberland
Emergency Management Agency

Meeting Attendance

Date: April 14, 2010 **Local EMA Directors Meeting**

NAME	TITLE	REPRESENTING	PHONE #	EMAIL ADDRESS
Bryce Rumery	MAINE ARES SEC COMM III	MAINE ARES	798-1116	KL6AX@JUNO.COM
Dick Brobst	EMA Director	North Yarmouth	829-3705	
Irene E Morton	EMA	Casco	655-7629	
William P. Pebbles	EMA	Harpswell	725-2612	
Raymond Lafrance	EMA Dir	Harrison	583-2975	
CHARLIE KONNOTH	EMA DIRECTOR	CAPE ELIZABETH	233 3379	CKONNOTH@MAINE.RR.COM
PETER GUERIN	FIRE CHIEF	CAPE ELIZABETH	767 3327	
Kelsey Sanborn	Chief	Baldwin	625 4285	
Michael Thurlow	Chief/EMA	Scarborough	730-4201	on file
Dan Small	Chief/EMA	Cumberland	829-5421	on file
Brent Libby	Chief/EMA	Standish	642-5448	" "
Ben Haskell	Captain/EMA	Standish	642-3462	ben_haskell5@yahoo.com
Megan Bickerstaff	Director of ES	American Red Cross	874-1192 x722	
Becca Matusovich	MCDC District Pt Liaison	Maine CDC	797-3424	becca.matusovich@maine.gov
Brianna Pierce	Cust Srv Advisor	CMP	842-2304	
Karen Rea	State Nurse Liaison ARC SO ME	ARC SO ME	317-0316	karen@maineclinrea.com
Lois Roth	Planner	CCEMA	892-6785	lroth@cumberlandcounty.org

Emergency Management Agency

Meeting Attendance

Date: April 14, 2010 **Local EMA Directors Meeting**

NAME	TITLE	REPRESENTING	PHONE #	EMAIL ADDRESS
Howard Rice, Jr	Fire Chief/EMA	Falmouth	(207) 781-2610	hrice@town.falmouth.me.us

County of Cumberland
EMERGENCY MANAGEMENT AGENCY
22 High Street Unit 1
Windham, Maine 04062

Telephone
(207) 892-6785

Fax
(207) 892-8617

August 31, 2009

Michael Thurlow
Scarborough Fire/EMA
246 Route 1
Scarborough, ME 4074

Dear Michael Thurlow,

In preparation for the 2010 Cumberland County Hazard Mitigation Plan Review, we are examining the list of mitigation measures identified by each municipality within Cumberland County and accessing progress on the mitigation goals and objectives.

Please review your 2005 Municipal Hazard Event Survey responses and answer the following questions for each project you identified:

1. Has this project been completed?
2. If not, is this project still relevant?
3. If this list is not complete, what project(s) would you add?

Based on the information collected and an analysis of that information, proposed changes to the plan will be made for the following five year period and will be submitted to the Maine Emergency Management Agency and Federal Emergency Management Agency.

Bear in mind that our goal is to identify your communities' mitigation priorities and that these projects may be eligible for FEMA Hazard Mitigation Grant Program funds, or Pre-Disaster Mitigation funds.

Please forward your response by 1 November 2009, to Lori Roth:
Roth@Cumberlandcounty.org
or mail your response to:
Lori Roth
Cumberland County Emergency Management Agency
22 High St.
Unit 1
Windham, ME 04062

Thank you for your prompt attention to this matter.

James E. Budway
Director, Cumberland County Emergency Management Agency

From: "Mike Thurlow" <MThurl@ci.scarborough.me.us>
To: "Lori Roth" <Roth@cumberlandcounty.org>, "Mike Shaw" <MShaw@ci.scarborough.me.us>
Date: 3/3/2010 12:15:37 PM
Subject: FW: Hazard Mitigation Plan project mapping

Lori,

I've copied your note to Mike Shaw our public works director. He and I collaborated on the list of mitigation projects that I provided to you earlier. He would be happy to meet with us and to provide whatever data you need.

We also have a robust records management and GIS system including a full time employee that works out of Mike's office that may be able to provide you with a lot of what you are gathering in the field without having to visit each site. We also track all expenses for all damage in town so generating that data isn't an issue for us whenever you need it.

If you want to propose a few dates to meet in April or May I will coordinate them and get back to you.

Thanks,
Mike

-----Original Message-----
From: Lori Roth [mailto:Roth@cumberlandcounty.org]
Sent: Wednesday, March 03, 2010 11:01 AM
To: Mike Thurlow
Subject: Hazard Mitigation Plan project mapping

Mike,

The next step in the HMP process is for us to meet, in order to map any hazard mitigation projects that Scarborough would like to have included in the 2010 Hazard Mitigation Plan. Areas (culverts, roads, etc.) incurring damage during the February rain storm would be a good place to start. All municipalities are required by FEMA to participate in the planning process.

You may choose to include public works in the meeting prior to mapping to explain the project. If they are knowledgeable, you may not even need to be present at the meeting (but of course you are welcome). I will need to stand at each site to take a photo and plot Lats and Longs.

Going forward, CCEMA will be collecting data (dates/locations/impacts/causes/mitigation measures) on events as they happen and mapping specific locations that require mitigation. This will greatly reduce the effort required by Scarborough to track, update and record hazards over each five year period. I will provide you with road tracker forms when we meet (I have attached a copy). As you know, tracking hazard damage for mitigation projects is an important factor in the grant application process that is currently difficult and time consuming to research.

The "road tracker" form should be used by public works from now on (one form for each road, to be filled out as damage occurs and repairs are made). They should be submitted to me quarterly (email, fax or mail). These forms will provide much of the history of repetitive damage needed when applying for mitigation money.

I will also be able to map damage areas and mitigation projects for Scarborough and provide you with reports on all you've submitted (including the
sites currently listed on the Hazard Mitigation Plan that we may visit). I will include appropriate new projects in the Hazard Mitigation Plan per your request. I have attached your response to the survey mailed in August 2009 for you in case you would like to review it.

The data collection effort will facilitate the pre-disaster mitigation grant application process, as projects will be documented, mapped and included within the 2010 Hazard Mitigation Plan. CCEMA will be able to provide Local EMA Directors and Public Works Directors with large-scale maps and some of the needed documentation to prepare capital improvement budgets and submit funding requests.

I will need someone (EMA or public works) to accompany me to the specific sites currently identified in the 2005 HMP and to ones that you wish to add to the 2010 Hazard Mitigation Plan. It should only take a few hours to map the projects.

Please call with any questions and to schedule a time to meet.
I am currently scheduling for the months of April and May.

Thank you,
Lori

Lori J Roth
Planner
Cumberland County Emergency Management Agency
22 High St.- Unit 1
Windham, ME 04062
207-892-6785
207-892-8617 (fax)

Maine Emergency Management Agency

RDMS Collaboration Center

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Assessment Details: MEMA / Community Assessments / Mitigation Projects

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Assessment Information

ID:	9357	**Staff (Device):**	VNOC User (VNOC)
County:	Cumberland	**Assessed:**	06/07/2010 1:42 PM
Subject:	122-10	**Posted:**	06/07/2010 1:42 PM
State:	Maine	**Last Reviewed:**	n/a
Lat, Lon:	43.609122, -70.313583	**Last Edited:**	n/a
mgrs:	n/a	**Last Shared:**	n/a

Assessment Details

Category: General Info [show / hide]

Assessor:	Lori Roth
Municipality:	Scarborough: Cumberland County
Contact:	Mike Shaw
*** Note:**	Public Works Director
Contact Phone:	207-730-4401
Address:	Route 1 near Pleasant Hill Rd, bridge over Nonesuch River

Category: Project Info [show / hide]

Type of Hazard:	Flooding
Critical Facilities:	No
Buildings:	No
Infrastructure:	Yes
(1) Federal Funds Received:	No
(1) Description of Event:	During heavy rains the Nonesuch River overtops the road. Hinders traffic and emergency vehicle access.
(1) Temporary Mitigation Solution:	barricades
Cost Estimate:	Other (use notes)
*** Note:**	$1,000,000- $2,000,000
Time Frame:	unknown
Permanent Mitigation Solution:	Upsize overflow culvert
Responsible Agency:	Scarborough/ MDOT Compact road
Status:	Pending
*** Note:**	Project listed in 2005 Hazard Mitigation Plan.

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ID:	9356	**Staff (Device):**	VNOC User (VNOC)
County:	Cumberland	**Assessed:**	06/07/2010 1:37 PM
Subject:	122-09	**Posted:**	06/07/2010 1:37 PM
State:	Maine	**Last Reviewed:**	n/a
Lat, Lon:	43.597047, -70.303716	**Last Edited:**	n/a
mgrs:	n/a	**Last Shared:**	n/a

Assessment Details

Category: General Info [show / hide]

Assessor:	Lori Roth
Municipality:	Scarborough: Cumberland County
Contact:	Mike Shaw
*** Note:**	Public Works Director
Contact Phone:	207-730-4407
Address:	Drainage ditch behind Parkway Dr.

Category: Project Info [show / hide]

Type of Hazard:	Flooding
Critical Facilities:	No
Buildings:	Yes
*** Note:**	floods businesses.
Infrastructure:	No
Type of Project:	Other (Use Notes)
*** Note:**	repair pipes, ditch
(1) Federal Funds Received:	No
(1) Description of Event:	Ditch overflows during heavy rain, floods businesses.
Cost Estimate:	Other (use notes)
*** Note:**	$50,000- $200,000
Time Frame:	six months
Permanent Mitigation Solution:	Repair pipes/ ditch
Responsible Agency:	Scarborough
Status:	Pending
*** Note:**	Project listed in 2005 Hazard Mitigation Plan.

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ID:	9355	**Staff (Device):**	VNOC User (VNOC)
County:	Cumberland	**Assessed:**	06/07/2010 1:30 PM
Subject:	122-08	**Posted:**	06/07/2010 1:30 PM
State:	Maine	**Last Reviewed:**	n/a
Lat, Lon:	43.584364, -70.297965	**Last Edited:**	06/07/2010 1:32 PM by lori.roth
mgrs:	n/a	**Last Shared:**	n/a


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Assessment Details

Category: General Info [show / hide]

Assessor:	Lori Roth
Municipality:	Scarborough: Cumberland County
Contact:	Mike Shaw
*** Note:**	Public Works Director
Contact Phone:	207-730-4401
Address:	Pleasan Hill Subdivision aka. "Brown Homes"

Category: Project Info [show / hide]

Type of Hazard:	Flooding
Critical Facilities:	No
Buildings:	Yes
*** Note:**	residential flooding
Infrastructure:	Yes
Type of Project:	Other (Use Notes)
*** Note:**	Upgrade storm drain system
(1) Federal Funds Received:	No
(1) Description of Event:	Water in road, flooded basements, damage to homes and damage to pavement.
(1) Cause:	undersized storm drain system
(1) Temporary Mitigation Solution:	pump out basements. Partial upgrade of storm drain system completed- Schooner Rd with Scarborough $.
Time Frame:	18 months
Permanent Mitigation Solution:	Upgrade storm drain system from Powderhorn Dr. through Gunstalk Dr.
Responsible Agency:	Scarborough

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Status:	Pending
*** Note:**	Project listed in 2005 Hazard Mitigation Plan, project partially completed by Scarborough.

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- 06/07/2010 1:32 PM
- 06/07/2010 1:32 PM

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ID:	9354	**Staff (Device):**	VNOC User (VNOC)
County:	Cumberland	**Assessed:**	06/07/2010 1:21 PM
Subject:	122-07	**Posted:**	06/07/2010 1:21 PM
State:	Maine	**Last Reviewed:**	n/a
Lat, Lon:	43.569122, -70.322112	**Last Edited:**	06/07/2010 1:23 PM by lori.roth
mgrs:	n/a	**Last Shared:**	n/a


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Assessment Details

Category: General Info [show / hide]

Assessor:	Lori Roth
Municipality:	Scarborough: Cumberland County
Contact:	Mike Shaw
*** Note:**	Public Works Director
Contact Phone:	207-730-4401
Address:	Marsh Land off Clay Pits Rd

Category: Project Info [show / hide]

Type of Hazard:	Flooding
Critical Facilities:	No
Buildings:	No
Infrastructure:	Yes
Type of Project:	Other (Use Notes)
*** Note:**	shoulder stabilization
(1) Federal Funds Received:	No
(1) Description of Event:	During high running tides and storms, the river banks wash out causing damage to the road.
(1) Temporary Mitigation Solution:	Repair road, add rip rap.
Time Frame:	one month
Permanent Mitigation Solution:	rip rap banks and other hard armor.
Responsible Agency:	Scarborough
Status:	Pending
*** Note:**	Project listed in 2005 Hazard Mitigation Plan.

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ID: 9353
County: Cumberland
Subject: 122-06
State: Maine
Lat, Lon: 43.560142, -70.281158
mgrs: n/a

Staff (Device): VNOC User (VNOC)
Assessed: 06/07/2010 1:12 PM
Posted: 06/07/2010 1:12 PM
Last Reviewed: n/a
Last Edited: 06/07/2010 1:15 PM by lori.roth
Last Shared: n/a


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Assessment Details

Category: General Info [show / hide]

Assessor: Lori Roth
Municipality: Scarborough: Cumberland County
Contact: Mike Shaw
*** Note:** Public Works Director
Contact Phone: 207-730-4401
Address: Higgins Beach along Bay View Dr. Modified from Pearl St to Morning St.

Category: Project Info [show / hide]

Type of Hazard: Coastal Erosion
Critical Facilities: No
Buildings: No
Infrastructure: Yes
(1) Federal Funds Received: Yes
*** Note:** $114,000 FEMA for reconstruction of Higgins Beach Seawall

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(1) Description of Event:	Mostly in winter. Damage to fence and dunes during major storms. Loss of sand from beach. Damage to private property.
(1) Temporary Mitigation Solution:	Mitigation completed on West end of beach, reconstruction of seawall Cliff St to Pearl St.
Time Frame:	one year
Permanent Mitigation Solution:	Storm breaks/ additional plantings
Responsible Agency:	Scarborough
Status:	Pending
*** Note:**	Porject listed in 2005 Hazard Mitigation Plan.

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ID: 9352
County: Cumberland
Subject: 122-05
State: n/a
Lat, Lon: 43.600531, -70.368330
mgrs: n/a

Staff (Device): VNOC User (VNOC)
Assessed: 06/07/2010 12:56 PM
Posted: 06/07/2010 12:56 PM
Last Reviewed: n/a
Last Edited: 06/09/2010 11:09 AM by lori.roth
Last Shared: n/a


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Assessment Details

Category: General Info [show / hide]

Assessor: Lori Roth
Municipality: Scarborough: Cumberland County
Contact: Mike Shaw
*** Note:** Public Works Director
Contact Phone: 207-730-4401
Address: Payne Rd @ Gateway Shops

Category: Project Info [show / hide]

Type of Hazard: Flooding
Critical Facilities: No
Buildings: Yes
*** Note:** residential
Infrastructure: Yes
Type of Project: Culvert / Double Culvert
(1) Federal Funds Received: No

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(1) Description of Event:	12"-18" of water over road. Water runs off Maine turnpike, shops and parking lots. Water backs up and causes residential flooding
(1) Cause:	Needs extensive drainage study to determine cause.
(1) Temporary Mitigation Solution:	Road closure (high traffic road, major corridor)
Time Frame:	one year
Permanent Mitigation Solution:	Upsize culvert, ditching and extensive drainage study.
Responsible Agency:	Scarborough/ MDOT compact State aid road
Status:	Pending
*** Note:**	Project new to 2010 Hazard Mitigation Plan.

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ID:	9351	**Staff (Device):**	VNOC User (VNOC)
County:	Cumberland	**Assessed:**	06/07/2010 12:49 PM
Subject:	122-04	**Posted:**	06/07/2010 12:49 PM
State:	Maine	**Last Reviewed:**	n/a
Lat, Lon:	43.572221, -70.392475	**Last Edited:**	06/09/2010 11:03 AM by lori.roth
mgrs:	n/a	**Last Shared:**	n/a


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Assessment Details

Category: General Info [show / hide]

Assessor:	Lori Roth
Municipality:	Scarborough: Cumberland County
Contact:	Mike Shaw
*** Note:**	Public Works Director
Contact Phone:	207-730-4401
Address:	Broadturn Rd @ Martin Ave

Category: Project Info [show / hide]

Type of Hazard:	Flooding
Critical Facilities:	No
Buildings:	No
Infrastructure:	Yes
Type of Project:	Culvert / Double Culvert
(1) Federal Funds Received:	Yes
*** Note:**	FEMA $ for shoulder work
(1) Description of Event:	Road flooding during heavy snow melt. Inaccessible tp emergency vehicles and local traffic. Environmental impact to Phillips Brook (DEP impaired stream) and shoulder erosion
(1) Cause:	Undersized culvert
Cost Estimate:	Other (use notes)
*** Note:**	$110,000
Time Frame:	Four Months
Permanent Mitigation Solution:	Upsize culvert and improve design
Responsible Agency:	Scarborough
Status:	Pending
*** Note:**	Project new to 2010 Hazard Mitigation Plan.

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ID:	9350	**Staff (Device):**	VNOC User (VNOC)
County:	Cumberland	**Assessed:**	06/07/2010 11:56 AM
Subject:	122-03	**Posted:**	06/07/2010 11:56 AM
State:	Maine	**Last Reviewed:**	n/a
Lat, Lon:	43.613983, -70.341187	**Last Edited:**	06/09/2010 11:06 AM by lori.roth
mgrs:	n/a	**Last Shared:**	n/a


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Assessment Details

Category: General Info [show / hide]

Assessor:	Lori Roth
Municipality:	Scarborough: Cumberland County
Contact:	Mike Shaw
*** Note:**	Public Works Director
Contact Phone:	207-730-4401
Address:	Gorham Rd @ Nonesuch River (Rt 114)

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Category: Project Info [show / hide]

Type of Hazard:	Flooding
Critical Facilities:	No
Buildings:	No
Infrastructure:	Yes
Type of Project:	Box Culvert
(1) Federal Funds Received:	Yes
(1) Description of Event:	Shoulder washout, minor pavement damage. Worse in winter and high tides.
(1) Cause:	Low road, undersized culvert.
(1) Temporary Mitigation Solution:	Road closure for 36-48 hours. High traffic road.
Cost Estimate:	Other (use notes)
*** Note:**	$750,000
Time Frame:	Two years
Permanent Mitigation Solution:	Raise road and upgrade to arched or box culvert.
Responsible Agency:	Scarborough/ MDOT Compact road
Status:	Pending
*** Note:**	Project new to 2010 Hazard Mitigation Plan.

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- 06/09/2010 11:06 AM
- 06/09/2010 11:06 AM
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ID:	9349	**Staff (Device):**	VNOC User (VNOC)
County:	Cumberland	**Assessed:**	06/07/2010 11:41 AM
Subject:	122-02	**Posted:**	06/07/2010 11:41 AM
State:	Maine	**Last Reviewed:**	n/a
Lat, Lon:	43.588500, -70.262933	**Last Edited:**	06/07/2010 11:43 AM by lori.roth
mgrs:	n/a	**Last Shared:**	n/a

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Assessment Details

Category: General Info [show / hide]

Assessor:	Lori Roth
Municipality:	Scarborough: Cumberland County
Contact:	Mike Shaw
*** Note:**	Public Works Director
Contact Phone:	207-730-4401
Address:	Sawyer St. @ Cape Elizabeth Line
*** Note:**	Possible joint project with Cape Elizabeth

Category: Project Info [show / hide]

Type of Hazard:	Flooding
Critical Facilities:	No
Buildings:	No
Infrastructure:	Yes
Type of Project:	Traffic / roadway
(1) Federal Funds Received:	No
(1) Description of Event:	Road under 10-12" of water. Blocks emergency vehicle access and evacuation route. Damage limited to shoulder erosion.
(1) Cause:	Road too low.
(1) Temporary Mitigation Solution:	Road Closure
Time Frame:	18 months
Permanent Mitigation Solution:	Raise the road
Responsible Agency:	Scarborough
Status:	Pending

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*** Note:**	Project listed in 2005 Hazard Mitigation Plan.

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County:	Cumberland	**Assessed:**	06/07/2010 11:30 AM
Subject:	122-01	**Posted:**	06/07/2010 11:30 AM
State:	Maine	**Last Reviewed:**	n/a
Lat, Lon:	43.621140, -70.427430	**Last Edited:**	06/09/2010 11:01 AM by lori.roth
mgrs:	n/a	**Last Shared:**	n/a


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Category: General Info [show / hide]

Assessor:	Lori Roth
Municipality:	Scarborough: Cumberland County
Contact:	Mike Shaw
*** Note:**	Public Works Director
Contact Phone:	207-730-4401
Address:	Mitchell Hill Rd @ Nonesuch River

Category: Project Info [show / hide]

Type of Hazard:	Flooding
Critical Facilities:	No
Buildings:	No
Infrastructure:	Yes
Type of Project:	Drainage Course
(1) Federal Funds Received:	Yes
*** Note:**	FEMA $- Patriot's Day to repair not mitigate
(1) Description of Event:	Shoulder erosion and pavement damage with rain storms greater than 1". Inaccessibile to emergency vehicles and local traffic. Environmental impact to the Nonesuch River.
(1) Temporary Mitigation Solution:	Close road
Cost Estimate:	Other (use notes)
*** Note:**	$20,000- $25,000
Time Frame:	Two weeks
Permanent Mitigation Solution:	Define ditch, armor plate shoulders and install rip rap, turnouts or intersceptors and check dam.
Responsible Agency:	Scarborough
Status:	Pending
*** Note:**	Project new to 2010 Hazard Mitigation Plan.

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ID:	9358	**Staff (Device):**	VNOC User (VNOC)
County:	Cumberland	**Assessed:**	06/07/2010 1:46 PM
Subject:	122-11	**Posted:**	06/07/2010 1:46 PM
State:	Maine	**Last Reviewed:**	n/a
Lat, Lon:	43.560142, -70.281158	**Last Edited:**	n/a
mgrs:	n/a	**Last Shared:**	n/a

Assessment Details

Category: General Info [show / hide]

Assessor:	Lori Roth
Municipality:	Scarborough: Cumberland County
Contact:	Mike Shaw
*** Note:**	Public Works Director
Contact Phone:	207-730-4401
Address:	Higgins Beach between Cliff St. and Shell St.

Category: Project Info [show / hide]

Type of Hazard:	Flooding
Critical Facilities:	No
Buildings:	Yes
*** Note:**	residential
Infrastructure:	Yes
Type of Project:	Other (Use Notes)
*** Note:**	storm drain system
(1) Federal Funds Received:	No
Time Frame:	unknown
Permanent Mitigation Solution:	Upgrade storm drain system
Responsible Agency:	Scarborough
Status:	Completed
*** Note:**	Listed in 2005 Hazard Mitigation Plan. Completed with Scarborough $.

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Scarborough – Mitigation Measures

Location	Type	Dates of known events	Description of event	Impacts	Cause	Proposed remedies	Estimated Cost
Flooding							
Higgins Beach between Cliff Street & Shell Street	Drainage Course	4-5 Times Yearly	Excessive flooding between houses in rainstorms greater than 1"	Damage to surrounding homes	Undefined drainage channel	Upgrade storm drain system	$50,000 - $200,000
Sawyer Street at Cape Elizabeth Line	Street flooding	4-5 Times Yearly at High Tides	Road under 10-12 inches of water	Access issues	Natural conditions	Raise road	$100,000 - $300,000
Pleasant Hill Subdivision a.k.a. "Brown Homes"	Street / Neighborhood	3-4 Times Yearly	Water in road / flooded basements	Damage to homes & damage to pavement	Undersize drainage system	Upgrade storm drain system	$100,000 - $300,000
Drainage ditch behind Parkway Drive	Drainage Course	4-5 Times Yearly	Ditchline overflows during heavy rain	Floods businesses	Failed drain system	Repair pipes / ditch	$50,000 - $200,000
Marsh Land off Clay Pits Road	Road Shoulder / Marsh	4-5 Times Yearly	During high-running tides / storms, the river banks wash	Silting of water. Damage to road	Natural channeling of water	Rip-Rap banks & other hard armor	$10,000 - $50,000
Route 1, near Pleasant Hill Road, bridge over Nonesuch River	Bridge	Every few years	During heavy rains, the Nonesuch River overtops Road	Hinders traffic and emergency access	Undersized drainage under road	Upsize culvert/bridge area	$1,000,000 - $2,000,000
Coastal Erosion							
Higgins Beach Along Bayview Drive	Beach Front	2-3 Times Yearly Mostly in Winter	Damage to fence & dunes during major storms	Loss of sand from beach. Damage to property	Natural storms	Additional plantings/ stormbreaks	$5,000 - $50,000

Sebago – Mitigation Measures

ELIGIBILITY - APPLICANTS MITIGATION	
Eligible Applicants:	**Primary Requirements:**
Eligible applicants include: • State and Local governments • Indian tribes or other tribal organizations • Certain non-profit organizations (such as public libraries)	To receive grants*, all* applicants must: 1. **PLAN** - Be participating in a FEMA approved Hazard Mitigation Plan 2. **NFIP** - Be in good standing with the National Flood Insurance Program (NFIP) 3. **COST BENEFICIAL** – Must have project with benefits exceeding costs
Note: Individual homeowners and businesses <u>*can not*</u> apply directly to the program; however, a community may apply on their behalf.	

ELIGIBILITY - PROJECT MITIGATION	
YES	**NO**
Acquisition of primary residences that have been repetitively damaged by natural hazards (such as flooding) and conversion to open space	***Major*** flood control projects such as dams, dikes, floodwalls, groins, jetties, levees, seawalls, waterway channelization or, beach re-nourishment projects
Relocation of primary residences that have been repetitively damaged by natural hazards.	**Maintenance or Capital Improvement Projects** such as annual ditch cleaning or new paving
Elevation of primary residences that have been repetitively damaged by natural hazards.	**Emergency Repairs** – these are covered under PA and/or 406 if related to the declared storm/county; otherwise, the town's responsibility
Public roads/culverts – Upgrades, upsizing and / or stabilization at repetitively flooded areas	**Engineering Designs** that *are not integral* to a proposed project
Minor structural flood control projects – such as low water crossings on public roads with repetitive flooding, but low traffic count.	**Studies or Mapping** – (Engineering, drainage, flood, feasibility…) that *are not integral* to a proposed project
Bank Stabilization on public roads to solve repetitive erosion problems	**Generators** *that are not integral* to a proposed project
Storm water management of repetitively flooded public roads / streets	**Phased** or partial projects

Five *minimum* criteria that all projects must meet in order to be considered for funding:

1. Is cost-effective; it has a Benefit to Cost Ratio (BCR) of 1:1 or greater
2. Conforms with the State and Local Hazard Mitigation Plans
3. Provides beneficial impact upon the designated disaster area
4. Conforms with environmental laws and regulations
5. Solves problem independently or is functional portion of solution

2D - STATEMENT OF DAMAGES / ROAD TRACKER

Name of Road

Date	Event/Type of Damage	Expense to Repair			Total Cost of Repairs Per Incident	General Notes
		Labor Cost	Equipment Cost	Materials Cost		
Totals		**$0.00**	**$0.00**	**$0.00**	**$0.00**	

County Of
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Cumberland County Charter Commission Frequently Asked Questions

By Cumberland County Charter Commission

On November 2, 2010 all voters in Cumberland County will be have the opportunity to accept the newly created Cumberland County Charter. Currently the County operates without any Charter. The Charter Commission members were elected in 2008 and have been working since that time to draft the proposed Charter. Extensive public outreach is under way to solicit public input. To help spread the word, we have compiled a list of Frequently Asked Questions for your review and consideration. Please feel free to contact any of us with questions.

1. What is a Charter?

A Charter is a document that defines how we organize local government. It spells out the specific duties and the limits of authority that we grant our local officials. It's a flowchart of responsibilities: who administers what and when, who will answer to whom, and how we guarantee that accountability.

Two Lights State Park, Cape Elizabeth, Maine

2. Who makes up the Cumberland County Charter Commission?

The Commission is comprised of six elected members — two from each of the three districts in Cumberland County — elected in November 2008 and three appointed public officials, one from each district. The members study how county government currently functions, seeks more efficient methods of providing important services, and delivers a charter that residents will vote to adopt — or reject — on November 2, 2010. Charter Commissions are routinely established to reform and streamline local governments.

3. What does the Charter Commission hope to accomplish?

The Charter will increase the ability of the County to expand its range of services and reduce costs. County government fills an important role that bridges the gap between municipal and state governments. The Commission's ultimate goal is to reduce redundancy in local government and deliver more services for less money.

(Continued on page 5)

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From the Chair
by Commissioner Feeney

In my last article I spoke of the venues you could visit on a Saturday or Sunday afternoon for some outdoor winter recreation. Now that Spring (and Summer) is here, other than dealing with the May and June showers I hope you have enjoyed them. Not many of us are quite ready from Mount Washington yet, but it all begins with small steps. If any of you drive along Baxter Blvd. you will observe the people running and walking, which could be too busy for you. However, re-read my last letter for other spots not as crowded (unless you're an early riser and get there at 6:OO AM).
Not many of you are aware that I am a volunteer for the White Mountain National Forest. Each Sunday I drive to Evans Notch on Route 113, approximately 20 miles north of Fryeburg. My duties include greeting visitors to the Brickett Place, a farm house built by John Brickett in 1830, and is now being renovated to recapture its original appearance. In addition I monitor and describe the many hiking trails within the Notch. Many of the hikes provide access to waterfalls and green emerald pools, which are not only cold in August but breathtaking in their beauty. Several of these hikes are a mile or less with slight elevation gain and suited for small children. For a description of the trails within the National Forest you can purchase an AMC (Appalachian Mountain Club) Guide with easy to read maps for trip planning, or, you can visit Ghostflowers.com and the 4000 footers link. Here you will find many, many mountain trails photographed by Kevin Talbot. Kevin is a professional photographer and he identifies alpine flowers, butterflies and rock formations along the paths- outstanding photography.

Blueberry Ridge Trail In Evans Notch
A Family Hiking Spot

One of the favorites hikes I did with my family was Blueberry Mountain which is aptly named. During the month of August there is an abundance of blue and blackberry bushes ready to be harvested prior to the bears. You needn't worry as the bears give humans a wide berth as they have become accustomed to human scent and avoid us as much as we avoid them.

Anyhow, come up some Sunday for a visit and hike. Stop me in the Courthouse and I will furnish you detailed directions. Incidentally the Forest Service did not provide me with a "Smokey the Bear" hat so don't expect to see me wearing one! ! !

Speaking of volunteering- are you aware of the volunteering being done at the CCRCC, EMA and the Sheriff's Office? I know of one group at the jail, My Sister's Keeper , that trains individuals who wish to become mentors. They provide assistance for women in transition from the jail back into society. They perform such tasks as assisting with housing, job applications, resumes etc., and helping with acquiring furniture, clothing and in general just being there for someone when needed. Another aspect is spiritual assistance when called upon.

I especially wish to thank the many volunteers who participate working on the upcoming Peter J. Feeney Memorial Golf Tournament, as well as those who have done so in the past. My family and I are sincerely grateful for your dedication to this event and what it means in remembrance of my son Peter. Well, enjoy the summer, when- it gets here and remember "Only you can prevent forest fires!"

Hazard Mitigation Updates

Lori Roth, Cumberland County Emergency Management Agency

Hazard Mitigation is defined as any action taken to reduce or eliminate the long-term risk to human life and property from natural hazards. Local jurisdictions (Municipal or County, as appropriate) are required to have a Hazard Mitigation Plan (HMP). In Maine, HMPs are maintained at the County level and incorporate all municipal mitigation considerations. The current Cumberland County HMP was completed in December, 2005.

Every five years the Federal Emergency Management Agency (FEMA) requires an update to local HMPs. As such, the Cumberland County Emergency Management Agency (EMA) has contracted with the Cumberland County Soil and Water Conservation District to lead the effort. Each municipality in Cumberland County is required to participate in the process and to endorse the final product in order to gain FEMAs approval of the updated plan. With the approval comes renewed eligibility for all municipalities to compete for valuable mitigation grant funding.

The HMP update process began, in earnest, earlier this spring. A detailed review of the status of projects listed in the 2005 HMP is ongoing and consideration is being given to new mitigation projects for incorporation in the 2010 HMP update. Local EMA Directors have been contacted by Cumberland County EMA to establish a meeting time with appropriate municipal officials to explain the plan update and to gather data supporting their mitigation projects. This data includes photographs and historical supporting documentation such as newspaper articles, invoices, equipment and personnel logs, etc. Also, site visits to project locations are conducted and Geographical Information System (GIS) data is collected using a Global Relief Technologies (GRT) Personal Digital Assistant (PDA) provided by the Maine Emergency Management Agency (MEMA). Cumberland County EMA is the only county in Maine using the GRT PDA for mapping and collection of field data for Hazard Mitigation Projects. To date, approximately half of our municipalities have participated in this process and the remainder have scheduled meetings to take place in the near future.

The data collection effort is extremely important. It will greatly facilitate the completion of pre-disaster mitigation grant applications should municipalities decide to compete for grant funding and it will provide important documentation to assist in the preparation of municipal capital improvement budgets. A summary of mitigation projects, either derived from or further refined with this data collection initiative, will be included in the 2010 HMP update.

Moving forward, Cumberland County EMA will continue collecting data on hazard events, such as large rain storms that produce flooding, and mapping specific locations that require mitigation. This should reduce the effort required by municipalities to track, update and record mitigation projects at the end of each five year planning period. Also, Public Works Directors have been provided with MEMA D-2 Damage "road tracker" forms to assist in the tracking of "history of damages". Tracking hazard damage for mitigation projects is an important factor in the grant application process but generally proves to be difficult and time consuming to research. Utilizing "road tracker" forms can eliminate this difficulty by readily providing much of the history of repetitive damage needed when applying for these mitigation grants.

As previously noted, completion of this effort requires "adoption by the local governing body." Therefore, the Cumberland County Commissioners and the Boards of Selectmen and the Councils of the 28 Incorporated Cities and Towns will be requested to adopt the 2010 Cumberland County Hazard Mitigation Plan prior to January, 2011. Adoption acknowledges that natural hazards create a risk of harm to persons and damage to property and that implementing certain measures may reduce the risk of harm to persons and damage to property resulting from these natural hazards.

Baldwin Saddleback West Road, February 2010

Legislative Update Second Session 124th Legislature

By Bill Whitten

The second session proved to be very productive, but with its issues, to say the least, and apparently the 125th is beginning with another major deficit. However, with the Cumberland County delegation meeting on an almost weekly basis during the session, and by collaborating with York County, we were able to get several important bills passed, which will be described later in this text. Members feel it is vital we continue our meetings and to that end, we had a meeting on June 10, with others anticipated over the summer and fall.

Some of the bills pertaining to the Cumberland County Region this spring:

Bond Funding:

Sent to referendum for the UNE Dental School to be possibly placed in Portland, the "mega berth" on the Portland waterfront and the "Mountain Division Rail" for travel through the Lakes Region. This was with the co-operation of the York County delegation and others.

Fema Maps: Ld 1699

An Act To Update and Modernize Maine's Floodplain Mapping, another effort shared with York County. As enacted, the bill establishes a fund within the State Planning Office to handle FEMA funds and any matching funds for the development of updated floodplain maps, with a goal of redoing maps statewide. Shortly after enactment, Maine learned that it would receive the necessary state match for the coastal floodplain maps through an ARRA grant from the United States Geological Survey (USGS).

Lyme Disease: Ld 1709

An Act to Enhance Public Awareness of Lyme Disease was enacted. It establishes Lyme Disease Awareness Month and directs the Maine Center for Disease Control to maintain a website with information on the prevention, diagnosis, and treatment of Lyme Disease. In addition, the legislature passed a Joint Resolution Memorializing the President of the United States and the United States Congress to Enact the Lyme and Tick-borne Disease Prevention, Education and Research Act of 2009. This was another example of the Cumberland and York Delegations working closely together to achieve passage.

Federal Economic Development Districts:

The Advocacy Group agreed to support establishing two federally designated Economic Development Districts (EDD) for the SMRPC and GPCOG regions out of the existing single Southern Maine Economic Development District (SMEDD). Neal Allen of GPCOG and Paul Schumacher of SMRPC have been meeting with representatives of the other EDDs and state and federal officials on this issue. At this point DECD is doing an economic review of the proposed new districts which will support a recommendation from Governor Baldacci to federal officials. Federal officials have expressed a willingness to consider

USS Portland Memorial, Portland, Maine

these changes. It is hoped the state can forward recommendations this summer. This is another instance where York and Cumberland County are working closely together.

Register Of Deeds Issues: Ld 1554:

We worked closely with Bob Howe of Howe & Co to assure the safe-keeping of the sanctity of the County deeds records from the beginning of time. A small business man wanted the counties to turn the records over to him for re-sale, at basically no charge. This was a long battle, but a reasonable compromise was reached and the threat has been temporarily abated, but it is now incumbent upon the registrars to create a statewide Deeds portal for web use.

Summary Of Other Major Items Monitored:

Emergency Communications system and PSAP reconfiguration, revised mixed martial arts bill, clearing the way for possible bouts in Maine later this year, future bond bills for Civic/ convention center construction/ remodeling statewide for the future, several items regarding the jail consolidation program, additional Pine Tree Zone benefits to encourage growth in Maine, additional BNAS programs, Recovery Zone bonds package and procedures, the BUDGET of course, issues surrounding domestic Violence, and several others.

I personally, again, want to thank our delegation for all the time, effort and honest hard work they put into serving the citizens of our County and the State. They are to be applauded for all they do, and for supporting each other to help our region grow and prosper.

Maine Irisis in Bloom

(Continued from page 1)

4. Is this an amendment of a previous charter or the formation of a fresh, brand new charter?

Cumberland County, the state's largest and most economically diverse region, operates without a charter. The State Legislature currently determines how services are rendered in Cumberland County.

5. What areas of county government will be impacted?

The proposed Charter eliminates two elected offices in an effort to streamline government and reduce costs to the taxpayer. Those offices no longer serve the purpose for which they were created more than one century ago. This Charter allows county government to widen the scope of the services it provides, tap into federal funding, and enables it to help municipalities with the cost and delivery of important local services. The proposed Charter also offers greater representation to the residents of Cumberland County.

6. How can I read a copy of the proposed Cumberland County Charter?

The Cumberland County Charter Commission has an excellent web site to view the Charter and all the various meetings and county outreach that is going on - *www.cumberlandcountychartercommission.org.*

7. Is it still possible to have input in the Charter development?

Yes, there are a number of scheduled Public Input sessions being held all over the County. In addition, any citizen in Cumberland County should feel free to contact any Commission member in their district with questions and comments. The Public Input will wrap up on July 30, 2010 and the draft Charter will be finalized for the November 2, 2010 vote. But the latest version of the Charter can always been seen on line at the web site: *www.CumberlandCountyCharterCommission.org.*

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From the Manager

Peter Crichton

In the Winter Issue of the Chronicle, I wrote about a familiar theme: the readiness and willingness of public administrators to be open to change and to continually improve the way our government organizations are doing business. And specifically, the importance of developing some benchmark comparisons for local government services in Maine that could be utilized by municipalities and counties across the state.

The truth is – whether we like it or not – with a difficult economy and the need to provide efficient, quality public services to our citizens, it is more important than ever that we establish a set of standards and benchmarks for the services we deliver rather than continue debating something that we may have not measured.

If this seems like science fiction or some futuristic management style, let me assure you it is not. Performance measurement and benchmarking is a pragmatic and practical management tool that can provide some surprisingly simple and straight forward answers. In fact, it is being done today all across the nation through the leadership of groups like the ICMA (International City & County Management Association) Center for Performance Measurement as well as publications like "What Works."

The success stories that are showcased in "What Works" features several cities and counties and how they have been able to cut costs, improve service delivery, and enhance their budget decision making by using performance measurement data. If they can do it, we can do it, too!

I have worked in municipal and county government for about 25 years. It has provided me with a unique perspective on our two systems of local government in Maine. And like some of my colleagues who are now county administrators and county managers, we are able to see how a county government's economy of scale and use of technology can in certain instances be a distinct advantage in the delivery of cost efficient, quality services. Such as the experience that Cumberland County has had with our dispatch and E911 services through our Regional Communications Center, which has saved the Town of Gorham (population 17,000) over $1,000,000 since 2005.

For me and the boards of commissioners that I have had the privilege to serve, it has never been about wanting to have a bigger county government. It has always been about trying to be a smart county government with a sense of obligation to try and do the best we can to meet the needs of our communities, our region, and our citizens.

Finally, you don't have to take my word for it. There are nationally accepted performance standards that have been developed by ICMA and other groups like GFOA (the Government Finance Officers Association) that with some adjustment can be used to measure our local government services in Maine. My hope is that we will use these standards to ensure that we are collectively allocating our limited personnel and financial resources in the most cost efficient and effective manner possible.

Portland Harbor, Portland, Maine

URBAN PROGRAM

Urban Review Program – Bridging the Stormwater Gap

The CCSWCD has been working with the Cumberland County Emergency Management Agency (CCEMA) in 2010 to update Cumberland County's Hazard Mitigation Plan (HMP). Hazard mitigation is defined as any action taken to reduce or eliminate the long-term risk to human life and property from natural hazards. The current Cumberland County HMP was completed in 2005. FEMA mandates that every five years the HMP be updated with reporting from the participating municipalities (that's all 28 Cumberland County communities) on the status of their existing mitigation efforts and the identification of new mitigation projects for the update.

2010 Winter Storm in Portland Credit: T.Greenway, Portland Press Herald

Data gathering to support the mitigation projects is an integral component of the update process. The HMP planning team has been meeting with municipal officials over the last few months explaining the process and collecting data such as photographs and other historical documentation of existing locations and infrastructure subject to damage from natural hazards such as flooding, severe winter and summer storm events, and wildfires. Identification and inclusion of these mitigation projects in the HMP greatly facilitates the completion of pre-disaster mitigation grant applications.

An important component of the HMP update process is enlisting public participation and municipal support for the plan and its mitigation projects. Completion of the effort requires adoption by the local governing bodies of all 28 Cumberland County communities. The draft HMP is currently available for public review and comment and is posted on the Cumberland County website at: http://www.cumberlandcounty.org/EMA/hmp_plans.htm.

For more information on the updating process of the 2010 HMP, contact Chris Baldwin at (207) 892-4700 or by e-mail at chris-baldwin@cumberlandswcd.org.

APPENDIX B

2005 HAZARD MITIGATION PLAN PROJECT LIST
&
MUNICIPALITY REPORTING OF COMPLETED PROJECTS

CUMBERLAND COUNTY HAZARD MITIGATION PLAN

Baldwin – Mitigation Measures

Location	Type	Dates of known events	Description of event	Impacts	Cause	Proposed remedies	Cost estimate
Flooding							
Various	Various	--	Generalized flooding	Emergency vehicle access, safety hazard, infrastructure damage	Inadequate drainage system(s)	Improve drainage system(s)	$50,000 - $200,000

Bridgton – Mitigation Measures

Location	Type	Dates of known events	Description of event	Impacts	Cause	Proposed remedies	Cost estimate
Flooding							
Various	Various	--	Generalized flooding	Emergency vehicle access, safety hazard, infrastructure damage	Inadequate drainage system(s)	Improve drainage system(s)	$50,000 - $200,000

Brunswick – Mitigation Measures

Location	Type	Dates of known events	Description of event	Impacts	Cause	Proposed remedies	Cost estimate
Flooding							
Various	Various	--	Generalized flooding	Emergency vehicle access, safety hazard, infrastructure damage	Inadequate drainage system(s)	Improve drainage system(s)	$50,000 - $200,000

Casco – Mitigation Measures

Location	Type	Dates of known events	Description of event	Impacts	Cause	Proposed remedies	Cost estimate
Flooding							
Crooked River Corridor	All	--	Generalized flooding	Property damage, transportation delays, road damage	Inadequate drainage system(s)	Improve drainage system(s)	$50,000 - $200,000

Cumberland – Mitigation Measures

Location	Type	Dates of known events	Description of event	Impacts	Cause	Proposed remedies	Estimated Cost
Flooding							
Range Road (5 Separate Sites)	Culvert	> 25 Year Storm	Street floods over 8-14 inches	Emergency Vehicle access	Undersized Culvert, inlet and outlet condition	Upsize culvert	$50,000 - $200,000
Rte#9 / Longwood's Road @ Sullivan Drive, Morgan Lane & Between Winn Rd and Cross Rd	Culvert	> 25 Year Storm	Road floods and washes out due to the intense running water	Limits emergency vehicle access	Undersized Culvert, inlet and outlet condition	Upsize culvert	$50,000 - $200,000
Tuttle Road (3 separate sites)	Culvert	> 25 Year Storm	Road floods and washes out due to the intense running water	Limits emergency vehicle access	Undersized Culvert	Upsize culvert/ Raise Road	$200,000 - $500,000
Harris Road (2 separate sites)	Culvert	> 25 Year Storm	Road floods and washes out due to the intense running water	Limits emergency vehicle access	Undersized Culvert	Upsize culvert/ Raise Road	$200,000 - $500,000
Greely Road @ Hillside Drive and Edes Road	Culvert	> 25 Year Storm	Road floods and washes out due to the intense running water, created in excess of $40,000 of repairs during past storms	Limits emergency vehicle access	Undersized Culvert	Upsize culvert/ Raise Road	$200,000 - $500,000
Middle Road @ Hazeltines	Culvert	> 25 Year Storm	Road floods and washes out	Limits emergency vehicle access	Inadequate capacity	Upsize culvert	$50,000 - $200,000
Town Landing Road	Culvert/Ditching	>25 Year Storm	Road washes out due to lack of storm drains and unimproved	Limits emergency vehicle access	Inadequate drainage	Install storm drainage system.	$200,000 - $500,000

Location	Type	Dates of known events	Description of event	Impacts	Cause	Proposed remedies	Estimated Cost
			drainage ditch				
Birch Lane	Storm Drain Outlet	On going problem	Coastal erosion during high tide and storm surge	Threat to public infrastructure		Redesign and replace, increased stabilization	$10,000 - $50,000

Falmouth – Mitigation Measures

Location	Type	Dates of known events	Description of event	Impacts	Cause	Proposed remedies	Estimated Cost
Flooding - stream flow							
Stream Crossing of East Branch Piscataqua River and Woodville Road	MDOT owned, large double culvert classified as Bridge	8/19/1991,10/22/96, several other storm events about once every 2-3 years	Flooding overtops roadway by up to 4 ft and the road has to be closed to traffic for up to 12 hours	All traffic and emergency access and maintenace vehicles	Inadequate capacity of culverts	Increase effective capacity of culverts by adding additional culverts or replacement with a true bridge structure or larger pipes	>$500,000
Flooding - storm drain							
Middle Road and Scittery Gusset Brook crossing	Triple culvert	8/19/1991,10/22/96, several other storm events about once every 2-3 years	Flooding overtops roadway by up to 1 foot and the road has to be closed to traffic for up to 6 hours	All traffic and emergency access and maintenace vehicles. Also safety hazard before barricades are able to be put up	Inadequate capacity of culverts	Increase effective capacity of culverts by adding additional culverts or larger pipes	>$500,000
Woodville Road at High School	culvert	8/19/1991,10/22/96, several other storm events about once every year		All traffic and emergency access and maintenace vehicles. Also safety hazard before barricades are able to be put up	Inadequate capacity of culverts	Increase effective capacity of culverts by adding additional culverts or larger pipes	$200,000 - $500,000
Woodville Road at # 138	double culvert	8/19/1991,10/22/96, several other storm events about once every year	Flooding overtops roadway by up to 1.5 feet and the road has to be closed to traffic		Inadequate capacity of culverts	Increase effective capacity of culverts by adding additional culverts or larger pipes	$200,000 - $500,000

Location	Type	Dates of known events	Description of event	Impacts	Cause	Proposed remedies	Estimated Cost
			for up to 6 hours				
Woods Road at field	culvert	8/19/1991,10/22/96, several other storm events about once every year	Flooding overtops roadway by up to 1 foot and the road has to be closed to traffic for up to 6 hours	All traffic and emergency access and maintenace vehicles. Also safety hazard before barricades are able to be put up	Inadequate capacity of culverts	Increase effective capacity of culverts by adding additional culverts or larger pipes	$200,000 - $500,000
Shoreline erosion							
Ocean Embankment		Ongoing	Embankment failure occurring	Municipal sewer in danger of failure	Unstable embankment -Ocean wave impact	Embankment Stabilization	$20,000 - $50,000
Forest Fires							
Town wide	Localized Areas			Loss of timber, possible loss of homes,pollution		Mitigate by keeping trails open for emergency fire access	NA

Freeport – Mitigation Measures

Location	Type	Dates of known events	Description of event	Impacts	Cause	Possible remedies	Estimated Cost
Flooding							
Flying Point Road	Culvert	Every 2-3 years	Road under water and impassable to traffic.	Emergency vehicle access, major connector road to Brunswick	undersized culvert, debris in stream channel, undersized pipes	Enlarge culvert and build road up	$200,000 - $500,000
Potential sites							
Potential for future erosion problems at Winslow Memorial park							
Potential for future construction projects which may impact different drainage areas and water run-off							
Potential for float damage at Harbor, Winslow Park & Cove Road if occurrence of extra high tides associated with exceptionally high winds							

Frye Island – Mitigation Measures

Location	Type	Dates of known events	Description of event	Impacts	Cause	Proposed remedies	Cost estimate
Flooding							
Various	Minor	--	Generalized flooding	Emergency vehicle access, safety hazard,	Inadequate drainage system(s)	Improve drainage system(s)	$10,000 - $50,000

Gorham – Mitigation Measures

Location	Type	Dates of known events	Description of event	Impacts	Cause	Proposed remedies	Estimated Cost
Flooding							
Tow Path Road 1/4 mile W of Route 202	Culvert(s)/Roadway	20-Oct-96	Town of Gorham received a total of 18" of rainfall from this event	$1,142 in damages to roadway structures	Scour/Erosion	Erosion Protection/Pipe re-sizing	$20,000 - $50,000
North Gorham Road 1/4 mile N of Hurricane Road at Red Brook	Culvert(s)/Roadway	20-Oct-96	Town of Gorham received a total of 18" of rainfall from this event	$3,450 in damages to roadway structures	Scour/Erosion	Erosion Protection/Pipe re-sizing	$20,000 - $50,000
Hurricane Road 3/4 mile E of North Gorham Road at Nason Brook	Culvert(s)/Roadway	20-Oct-96	Town of Gorham received a total of 18" of rainfall from this event	$6,198 in damages to roadway structures	Scour/Erosion	Erosion Protection/Pipe re-sizing	$20,000 - $50,000
Hogdon Road 1/4 mile E of Route 202 at South Branch Brook	Multi-plate pipe bridge	20-Oct-96	Town of Gorham received a total of 18" of rainfall from this event. Floodwaters destroyed much of the multi-plate at this location	$70,244 in damages to roadway structures	Floodwater		$200,000 - $500,000
Brackett Road at McLellan Road at Stroudwater River Bridge	Culvert(s)/Roadway	20-Oct-96	Town of Gorham received a total of 18" of rainfall from this event	$11,073 in damages to roadway structures	Scour/Erosion	Erosion Protection/Pipe re-sizing	$20,000 - $50,000
Washburn Road 250' W of Route 114 at Stroudwater River	Culvert(s)/Roadway	20-Oct-96	Town of Gorham received a total of 18" of rainfall from this event	$5,764 in damages to roadway structures	Scour/Erosion	Erosion Protection/Pipe re-sizing	$20,000 - $50,000
Longfellow Road 1/4 mile NE of	Culvert(s)/Roadway	20-Oct-96	Town of Gorham received a total of	$1,940 in damages to roadway structures	Scour/Erosion	Erosion Protection/Pipe re-	$20,000 - $50,000

Location	Type	Dates of known events	Description of event	Impacts	Cause	Proposed remedies	Estimated Cost
Brackett Road at Indian Camp Brook			18" of rainfall from this event			sizing	
Mitchell Hill Road 1 mile S of Route 22 at Nonesuch River	Culvert(s)/Roadway	20-Oct-96	Town of Gorham received a total of 18" of rainfall from this event	$13,284 in damages to roadway structures	Scour/Erosion	Erosion Protection/Pipe re-sizing	$20,000 - $50,000
Dingley Spring Road 100 feet N of Line Road at Branch Brook	Culvert(s)/Roadway	20-Oct-96	Town of Gorham received a total of 18" of rainfall from this event	$7,039 in damages to roadway structures	Scour/Erosion	Erosion Protection/Pipe re-sizing	$20,000 - $50,000
Wood Rd 4/10 mile E of Finn Parker Road at Files Brook	Culvert(s)/Roadway	20-Oct-96	Town of Gorham received a total of 18" of rainfall from this event	$4,853 in damages to roadway structures	Scour/Erosion	Erosion Protection/Pipe re-sizing	$20,000 - $50,000
Day Road 0.3 mile W of Brackett Raod at branch to Indian Camp Brook	Culvert(s)/Roadway	20-Oct-96	Town of Gorham received a total of 18" of rainfall from this event	Damage to roadway structures	Scour/Erosion	Erosion Protection/Pipe re-sizing	$20,000 - $50,000
Weeks Road 1 M W of South Street at Gully Brook	Culvert(s)/Roadway	20-Oct-96	Town of Gorham received a total of 18" of rainfall from this event	$2,664 in damages to roadway structures	Scour/Erosion	Erosion Protection/Pipe re-sizing	$20,000 - $50,000
Plummer Road 1/2 mile E of Westcott Road at Westcott Brook	Culvert(s)/Roadway	20-Oct-96	Town of Gorham received a total of 18" of rainfall from this event	$5,873 in damages to roadway structures	Scour/Erosion	Erosion Protection/Pipe re-sizing	$20,000 - $50,000
Deering Road 4/10 mile W of Route 22 at Stroudwater River	Culvert(s)/Roadway	20-Oct-96	Town of Gorham received a total of 18" of rainfall from this event	$2,560 in damages to roadway structures	Scour/Erosion	Erosion Protection/Pipe re-sizing	$20,000 - $50,000
Huston Road 1/4 mile E of Route 114 at Johnson Brook	Culvert(s)/Roadway	20-Oct-96	Town of Gorham received a total of 18" of rainfall from this event	$4,935 in damages to roadway structures	Scour/Erosion	Erosion Protection/Pipe re-sizing	$20,000 - $50,000

Location	Type	Dates of known events	Description of event	Impacts	Cause	Proposed remedies	Estimated Cost
New Portland Road 1 mile E of Brackett Road at branch to Indian Camp Brook	Culvert(s)/Roadway	20-Oct-96	Town of Gorham received a total of 18" of rainfall from this event	$6,644 in damages to roadway structures	Scour/Erosion	Erosion Protection/Pipe re-sizing	$20,000 - $50,000
Flaggy Meadow Road 1.5 miles W of Cressey Road at Little River	Culvert(s)/Roadway	20-Oct-96	Town of Gorham received a total of 18" of rainfall from this event	Damages to roadway structures	Scour/Erosion	Erosion Protection/Pipe re-sizing	$20,000 - $50,000
Buck Street 1/4 mile E of Spiller Road	Culvert(s)/Roadway	20-Oct-96	Town of Gorham received a total of 18" of rainfall from this event	$1,607 in damages to roadway structures	Scour/Erosion	Erosion Protection/Pipe re-sizing	$20,000 - $50,000
Brackett Road 800 Feet N of McLellan Road	Culvert(s)/Roadway	20-Oct-96	Town of Gorham received a total of 18" of rainfall from this event	$6,756 in damages to roadway structures	Scour/Erosion	Erosion Protection/Pipe re-sizing	$20,000 - $50,000
Brackett Road at Indian Camp Bridge	Bridge	19-Aug-91	Flooding from Hurricane Bob	Damage to bridge structure	Floodwater	Additional scour protection and/or a hydrology & hydraulics study to redesign bridge	$200,000 - $500,000
Fort Hill Road at Tannery Brook	Bridge	19-Aug-91	Flooding from Hurricane Bob	Damage to bridge structure	Floodwater	Additional scour protection and/or a hydrology & hydraulics study to redesign bridge	$200,000 - $500,000
Files Road at Files Brook	Bridge	none	N/A	Potential exists for scour to bridge structure/foundation	Floodwater	Scour protection	$20,000 - $50,000
New Portland Road 3000 feet W of Brackett Road at branch to Indian Camp Brook	Culvert(s)/Roadway	19-Aug-91	Flooding from Hurricane Bob	Scour to roadway/Flooding	Floodwater	Erosion Protection/Pipe re-sizing	$20,000 - $50,000

Location	Type	Dates of known events	Description of event	Impacts	Cause	Proposed remedies	Estimated Cost
Ice							
Municipal Center - Radio Tower	Radio Tower	1998 Ice Storm	Town of Gorham received a major coating of ice that created a hazard to the radio tower	Tower was heavily loaded with ice and the roof to the fire station on which the tower sits began leaking water	Ice load	Redesign or replacement of radio tower.	$20,000 - $50,000
Other							
Dingley Springs Wellhead Protection Area	Wells	none	N/A	Potential exists for contamination of this well system as a result of a natural disaster	Surface water infiltration	Development of a containment system around this area	$20,000 - $50,000

Gray – Mitigation Measures

Location	Type	Dates of known events	Description of event	Impacts	Cause	Proposed remedies	Cost estimate
Flooding							
Various	Various	--	Generalized flooding	Emergency vehicle access, safety hazard, infrastructure damage	Inadequate drainage system(s)	Improve drainage system(s)	$50,000 - $200,000

Harpswell – Mitigation Measures

Location	Type	Dates of known events	Description of event	Impacts	Cause	Possible remedies	Estimated Cost
Flooding – culvert							
Route 123- North Harpswell	Culvert Flooding	Once every 2-3 years	One of Town's two main arterial roads floods to depth of 12"-18". Takes from 24-48 hours to subside.	Emergency and passenger vehicle access.	Undersized culvert	Upgrade storm drain system and culvert.	$200,000 - $500,000
Flooding - coastal							
Causeway on Route 123-South Harpswell, Potts Point	Road gets flooded with water and debris.	During a strong Nor'easter and Hurricanes	Storm Surge up to 12", road fills with debris. A snowplow is often used when flooding subsides to remove debris.	Emergency and passenger vehicle access.	Causeway is too low	Increase the size of the causeway.	$200,000 - $500,000

H**arrison – Mitigation Measures**

Location	Type	Dates of known events	Description of event	Impacts	Cause	Proposed remedies	Cost estimate
Flooding							
Various	Various	--	Generalized flooding	Emergency vehicle access, safety hazard, infrastructure damage	Inadequate drainage system(s)	Improve drainage system(s)	$50,000 - $200,000

Long Island – Mitigation Measures

Location	Type	Dates of known events	Description of event	Impacts	Cause	Proposed remedies	Cost estimate
Flooding							
Various	Various	--	Generalized flooding	Emergency vehicle access, safety hazard, infrastructure damage	Inadequate drainage system(s)	Improve drainage system(s)	$50,000 - $200,000

Naples – Mitigation Measures

Location	Type	Dates of known events	Description of event	Impacts	Cause	Proposed remedies	Cost estimate
Flooding							
Various	Various	--	Generalized flooding	Emergency vehicle access, safety hazard, infrastructure damage	Inadequate drainage system(s)	Improve drainage system(s)	$50,000 - $200,000

New Gloucester – Mitigation Measures

Location	Type	Dates of known events	Description of event	Impacts	Cause	Proposed remedies	Cost estimate
Flooding							
Woodman Road near Wharff Road	Two (2) 4' culverts	Every major rainstorm 2" – 3"	12" – 18" of water over road	Have to close road to traffic	Downstream flow slowed by beaver dams	Remove dam, build up road, add culverts	
Woodman Road, Meadow Lane at Brook Crossing	Culverts	Every major rainstorm 2" – 3"	12" – 18" of water over road; some erosion and road damage	Sometimes close road to traffic and emergency vehicles	Streamflow restricted by beaver dams	Remove beaver dams, increase culvert capacity	
Ayer Road at Meadow Brook Crossing	Multiple culverts	Major rainstorm 3" +	12" of water over roadway road surface	Close road to traffic, dead end road	Downstream flow restricted by beaver dams and sediment	Remove beaver dams, clean stream channel, some new culverts larger size	

North Yarmouth – Mitigation Measures

Location	Type	Dates of known events	Description of event	Impacts	Cause	Proposed remedies	Cost estimate
Flooding							
Various	Various	--	Generalized flooding	Emergency vehicle access, safety hazard, infrastructure damage	Inadequate drainage system(s)	Improve drainage system(s)	$50,000 - $200,000

Portland - Mitigation Measures

Location	Type	Dates of known events	Description of event	Impacts	Cause	Proposed remedies	Estimated Cost
System overcharge							
High St. @ Fore St	Major traffic Thoroughfare, neighborhood, part of bridge access system	Storm dependent	Rain event greater than one inch an hour cause all the covers on the storm drain system to be blown off	Emergency vehicle hospital route access, safety hazard,	Undersized pipes in storm drain system	Upgrade storm drain system, map stormwater system	$500,000 - $1,000,000
Park St. @ York St.	Residential neighborhood	Storm dependent	Rain event greater than one inch an hour cause all the covers on the storm drain system to be blown off	Residential neighborhood, major safety hazard	Undersized pipes in storm drain system	Upgrade storm drain system, map stormwater system	$500,000 - $1,000,000
Gertrude St.	Neighborhood	Every 1-2 years	Property and basement flooding	Residence damage	Inadequate system capacity	Modify system elevations, install backflow prevention, map stormwater system	$500,000 - $1,000,000
Capisic St. at Bancroft St.	Neighborhood	Every 1-2 years	Property and basement flooding	Residence damage	Inadequate system capacity	Modify system elevations, install backflow prevention	$500,000 - $1,000,000

Location	Type	Dates of known events	Description of event	Impacts	Cause	Proposed remedies	Estimated Cost
#389 Presumpscot St.	Culvert	Every 2-3 years	Culvert washes out	Causes replacement of culvert and earthwork	Undersized culvert	Upgrade culvert system, map stormwater system	$500,000 - $1,000,000
Preble St./ Elm @ Marginal Way	Streets & Buildings	08/21/2004	Storm water pipes from three separate systems tie into one pipe before connecting into the main discharge chamber	During heavy rain storms (1 1/2 - 2 inches per hour) all three systems backup causing flooding streets and buildings.	Storm water system in area under sized	Tie all three systems into the diversion tunnel separately	$500,000 - $1,000,000
Hanover, Preble, and Alder St.	Buildings, mostly business	Last event 8/21/04	Floor drains and fixture units back-up, causing sewage to flood building	Damage to business inventory and sanitary clean-up costs	Storm water system in area under sized	Upgrade storm drain system; install backflow prevention.	$500,000 - $1,000,000
Tidal Flooding							
Portland Pier	Street / Pier	Occurs with astronomical high tides	Pier access street covered with 1-2 feet of water	Roadway & pier transportation system impassable / Islands ferry services disrupted	Elevation of roadway and pier too low	Increase the elevation of the roadway and pier	$500,000 - $1,000,000
Congress St. at Stroudwater Crossing	Culvert / Bridge / Street	Occurs with astronomical high tides	Culvert reaches capacity and roadway is overtopped	Roadway transportation system impassable	Roadway elevation and culvert size	Modify roadway and / or culvert system,map stormwater system	$500,000 - $1,000,000

Location	Type	Dates of known events	Description of event	Impacts	Cause	Proposed remedies	Estimated Cost
Eastern Marginal Way	Street	Occurs with astronomical high tides	Street covered with 1-2 feet of water, sewer back-ups	Roadways and commercial buildings	System and roadway elevation	Modify system and roadway elevations, install backflow prevention	$500,000 - $1,000,000
Commercial St.	Street	Occurs with astronomical high tides	Street covered with 1-2 feet of water	Roadway transportation system impassable	Undersized pipes in storm drain system	Upgrade storm drain system.	$500,000 - $1,000,000
Stream flooding							
Alden and Violette Circle	Neighborhoods	Storm dependent	Sewer back-ups and roadway flooding	Roadways and residential buildings	Undersized brook channels and culverts	Upsize Lucas St. culvert, build detention ponds upstream, add backflow prevention valves	$500,000 - $1,000,000
Mona/Bernard/Washington/Maine Avenue area; adjacent to the Fall Brook Channel (between Ray Street and Maine Avenue)	Culverts and Neighborhood	Storm event dependent; location is within 100 year flood plain	Home, channel, and roadway flooding	Flood insurance required of residents and risk of flooding in an 100 years storm event. Basement and arterial roadway flooding	Undersized water way and culverts	Stormwater easement acquisition, construction of new culverts and widened waterways	$500,000 - $1,000,000
Other hazards							

Location	Type	Dates of known events	Description of event	Impacts	Cause	Proposed remedies	Estimated Cost
Higgins Reclamation site	Reclamation Facility	2001	Fire in pile of mixed debris	Polluted water runoff from firefighting	Vandals	Site Security system, fire suppression gear	$50,000 - $200,000
Varies	Neighborhoods and Islands	August 1998, and summer of 2002(?)	Tree blowdowns and sewer back-ups	Roadways and residential and commercial buildings		Implement Backflow Prevention system, trim trees, remove dead trees	$50,000 - $200,000
High Elevation areas	Neighborhood	Storm dependent	Tree blowdowns	Roadways, driveways, and power system	Excessive wind speed	Tree trimming, removal,tree inventory	$50,000 - $200,000
Downtown Streets, various locations	Streets & Buildings	Storm & situation dependent	Street collapse due to fallen debris, material blocking access	Streets and sidewalks rendered impassable	Excessive wind speed, flooding,	install barricades shut off access	$10,000 - $50,000
Various locations	Streets/sidewalks, neighborhoods	Winter of 1998	Excessive snow and ice accumulation	Streets and sidewalks rendered impassable	Excessive snow and ice accumulation	Special snow removal equipment- "snow melter unit"	$500,000 - $1,000,000

Pownal – Mitigation Measures

Location	Type	Dates of known events	Description of event	Impacts	Cause	Proposed remedies	Cost estimate
Flooding							
Various	Various	--	Generalized flooding	Emergency vehicle access, safety hazard, infrastructure damage	Inadequate drainage system(s)	Improve drainage system(s)	$50,000 - $200,000

Raymond – Mitigation Measures

Location	Type	Dates of known events	Description of event	Impacts	Cause	Proposed remedies	Estimated Cost
Road Drainage							
From Ledge Hill Road to Spring Valley Road	Residential Neighborhood	Every Year	Heavy rains washes out shoulder and erodes ditch line.	Safety hazard to public	Steep hill and open ditch designs	Closed drain and catch basin and curb.	$100,000 - $500,000
Mountain Road from Spiller Hill to McDermott Drive	Street, residential neighborhood	Every 2 - 3 years	culvert freezes and ground water runs over the road and freezes	Safety hazard to public	Undersized culvert and inadequate ditches	Upgrade culvert and ditch	$20,000 - $50,000
Elizabeth Ave from Route 302 to Pine Road	Neighborhood street	Every year	Water runs from Route 302 and parking lot and freezes	Safety hazard to public			
Plains Road at Route 85 and Crescent Beach	Neighborhood street	Every year	Water runs down Plains Road into Route 85	Gravel and sand in roadway - safety hazard	No ditch and inadequate catch basin and drainage	Install closed drain and new catch basins and curb	$50,000 - $200,000

Scarborough – Mitigation Measures

Location	Type	Dates of known events	Description of event	Impacts	Cause	Proposed remedies	Estimated Cost
Flooding							
Higgins Beach between Cliff Street & Shell Street	Drainage Course	4-5 Times Yearly	Excessive flooding between houses in rainstorms greater than 1"	Damage to surrounding homes	Undefined drainage channel	Upgrade storm drain system	$50,000 - $200,000
Sawyer Street at Cape Elizabeth Line	Street flooding	4-5 Times Yearly at High Tides	Road under 10-12 inches of water	Access issues	Natural conditions	Raise road	$100,000 - $300,000
Pleasant Hill Subdivision a.k.a. "Brown Homes"	Street / Neighborhood	3-4 Times Yearly	Water in road / flooded basements	Damage to homes & damage to pavement	Undersize drainage system	Upgrade storm drain system	$100,000 - $300,000
Drainage ditch behind Parkway Drive	Drainage Course	4-5 Times Yearly	Ditchline overflows during heavy rain	Floods businesses	Failed drain system	Repair pipes / ditch	$50,000 - $200,000
Marsh Land off Clay Pits Road	Road Shoulder / Marsh	4-5 Times Yearly	During high-running tides / storms, the river banks wash	Silting of water. Damage to road	Natural channeling of water	Rip-Rap banks & other hard armor	$10,000 - $50,000
Route 1, near Pleasant Hill Road, bridge over Nonesuch River	Bridge	Every few years	During heavy rains, the Nonesuch River overtops Road	Hinders traffic and emergency access	Undersized drainage under road	Upsize culvert/bridge area	$1,000,000 - $2,000,000
Coastal Erosion							
Higgins Beach Along Bayview Drive	Beach Front	2-3 Times Yearly Mostly in Winter	Damage to fence & dunes during major storms	Loss of sand from beach. Damage to property	Natural storms	Additional plantings/ stormbreaks	$5,000 - $50,000

Sebago – Mitigation Measures

Location	Type	Dates of known events	Description of event	Impacts	Cause	Proposed remedies	Cost estimate
Flooding							
Various	Various	--	Generalized flooding	Emergency vehicle access, safety hazard, infrastructure damage	Inadequate drainage system(s)	Improve drainage system(s)	$50,000 - $200,000

South Portland – Mitigation Measures

Location	Type	Dates of known events	Description of event	Impacts	Cause	Proposed remedies	Cost estimate
Flooding - catch basin							
Broadway @ Daytona	New system	1-2 times a year	Street flooding	Traffic flow	Basins need to be relocated	Relocate basin. This is a new system	$50,000 - $200,000
Highland Ave.@ High School	Catch basin 12" storm system	8-10 times per year	Street flooding system backs up	Traffic flow	Undersized storm line	Upgrade storm drain system.	$100,000 - $500,000
Main Street @ Massachusetts Ave.	Catch basin storm system	4-5 time per year	Roadway flooding	Roadway impacts	Road condition problem	System o.k. road condition problem	$100,000 - $500,000
Main Street @ Wallace Ave.	Catch basin storm system	1-2 times per year	Roadway flooding	Traffic and adjacent properties	Road condition problem	System o.k. road condition problem	$100,000 - $500,000
Maine Mall Road @ Long Creek	Catch basin storm system	Once every 5 years	Debris collects on basin and causes flooding	Slows traffic	Debris clogs basins	Known to backup with leaves and debris	$5,000 - $20,000
Preble Street @ Alder and Day Streets	Catch basin neighborhood	3-4 times per year	Catch basin collects debris and causes road flooding	Slows traffic	Debris clogs basins	Curb inlet needed debris problem	$5,000 - $20,000
Broadway@ Boys Club	Catch basin storm system	Heavy rain events	Flooding of Greenbelt and road	none	Debris clogs basins	New sidewalks and upgraded system	$50,000 - $200,000
Flooding - storm drain system							
Highland Ave. @ Whispering Pines	Flooding of street	2-3 time per year	Roadway @ intersection floods approximately 18" deep	Interferes with traffic flow.	Undersized storm line	Upgrade storm drain system.	$100,000 - $500,000
Broadway @ underpass	Street	1-2 times per year	Street floods several feet deep	Emergency vehicle access. Main traffic route bisected	Inadequate system capacity	Upgrade storm drain system. Debris behind sidewalk.	$100,000 - $500,000
Rhode Island @ Dead End	Storm drain inlet	Once every 5 years	System Inlet clogs causing flooding	Floods adjacent properties	System inlet clogs	Maintain inlet	$5,000 - $20,000

Location	Type	Dates of known events	Description of event	Impacts	Cause	Proposed remedies	Cost estimate
Dike Farm Road @ Meadow Way	Residential neighborhood	Heavy rain events	Streets flooding because of surcharge	Traffic	Bad 36" cement storm system on Sokokis	This system is scheduled to be replaced.	$50,000 - $200,000
Flooding - stream flow							
Highland Ave. @ Trout Brook	Cement culverts are new	Not since upgrade	Roadway floods	Traffic	Over flowing of Brooks and Ponds	Maybe the cleaning of brooks. Brooks are over grown (DEP)	$10,000 - $50,000
Boothby @ Trout Brook	Culvert	3-5 time per year	Adjacent property flooding	Residential property and roadway impacts	Undersized culvert	Upsize culvert	$10,000 - $50,000
Fessenden @ Trout Brook	Culvert	2-3 times per year	Adjacent property flooding	Residential property and roadway impacts	Undersized culvert	Upsize culvert	$10,000 - $50,000
Nutter Road @ curve	Storm drain	1-2 times per year	Floods across road	Traffic impact	Undersized storm drain	Upsize system	$10,000 - $50,000
Highland Ave. @ Gamblers Arm Brook	Culvert and stream bed capacity	5 times per year	Residential flooding, roadway flooding	Impacts traffic flow and down stream flooding	Development	System upgrade and evaluation of stream bed.	$10,000 - $50,000
Flooding – roadway							
Westbrook Street @ 295	18" storm system	Every heavy rain event	Underpass floods, bridge drains to road.	Slows traffic	Road condition: grooves in road	Grooves in road that hold water and basins are high	$50,000 - $200,000
Angell Ave. @ Preble Street	Catch basin storm system	Heavy rain events	Roadway flooding	Slow Traffic	Debris clogs basins	Install curb inlets because basins are off side of road (debris)	$50,000 - $200,000
Flooding - ditches and culverts							
Running Hill Road @ Maine Mall Road	Street flooding	1-2 times per year	Floods intersection	Traffic impacts	Ditch flow capacity	Increase ditch capacity.	$5,000 - $40,000
Ocean Street @ Brenton Street	Culvert	Brook overflows banks	Roadway flooding	Impacts road way and adjacent properties	High water leaving ponds (Hinckley Park)	Maybe clean brook for better flow (DEP)	$10,000 - $50,000

CUMBERLAND COUNTY HAZARD MITIGATION PLAN

Location	Type	Dates of known events	Description of event	Impacts	Cause	Proposed remedies	Cost estimate
Broadway @ Scarborough line	Open drain ditch system	Once every 5 years	Street Flooding	Traffic Impacts	Low Areas	All has been upgraded by R.J. Grondin & Sons	NA
Cummings Road @ Westbrook town line	Culvert system	During a 25 year event	Street washout	Traffic Impacts, emergency vehicle access	Undersized Culvert	This was upgraded when new construction took place.	NA
Willow @ Sand Pebble Condo's	Drain system	Once every ten years	Property flooding	Property flooding	System surcharge at high tide.	Tidal effect	$100,000 - $400,000

Standish – Mitigation Measures

Location	Type	Dates of known events	Description of event	Impacts	Cause	Proposed remedies	Cost Estimate
Flooding							
Stream crossing brook with Middle Jam Road	Culvert and old stone culvert under eel weir canal	Twice per year typically	Water will overtop road by approx one foot. Water will back up into adjacent neighborhood.	Vehicle and emergency vehicle access, safety hazard,	Undersized culvert,	Upsize culvert, under canal. This may require jacking.	$50,000 - $200,000
Sticker River & Route 114 (MDOT owner)	Culvert	Oct-96	Flooding over top of roadway	All traffic reduced to one lane	Undersized culvert,	Upsize culvert, Create spillway / armor downstream side of road bed.	$50,000 - $200,000
Unnamed Stream crossing of Blake road approx 2250 from Blake Roads intersection w/ Rte 25	Twin 4' diameter corrugated metal pipe culverts	Oct-96	Water topped road and washed away half of road on downstream side.	Emergency vehicle access, safety hazard	Undersized culvert	Upsize culvert, Create spillway / armor downstream side of road bed.	$50,000 - $200,000
No-name stream crossing of State Route 35 at 100 year flood zone. Approx 12400' SW from intersection with Rte25.	MDOT owned Twin Culvert	Every 2-3 years	Road was under water resulting in substantial shoulder wash.	Emergency vehicle access, safety hazard, Routine maintenance costs	Undersized culvert,	Upsize culvert, Create spillway / armor downstream side of road bed.	$50,000 - $200,000
No-name stream crossing of State Route 35A or Cape Rd.. Approx 1500' SW from intersection with Rte25.	Town owned culvert	Oct-96	Flooding over top of roadway	Emergency vehicle access, safety hazard, Routine maintenance costs	Undersized culvert	Upsize culvert, Create spillway / armor downstream side of road bed.	$50,000 - $200,000

Location	Type	Dates of known events	Description of event	Impacts	Cause	Proposed remedies	Cost Estimate
No-name stream crossing of State Route 35 or Northeast road . Approx 2000' NE from intersection with Rte25.	MDOT culvert	Every 2-3 years	Flooding over top of roadway	Emergency vehicle access, safety hazard, Routine maintenance costs	Undersized culvert	Upsize culvert, Create spillway / armor downstream side of road bed.	$50,000 - $200,000
No-name stream crossing of Route 35 at 100 year flood zone. Approx 13,000' SW from intersection with Rte 25.	MDOT owned numerous small culverts	Every 2-3 years	Road was under water resluting in substantial shoulder wash.	Emergency vehicle access, safety hazard, Routine maintenance costs	Undersized culvert,	Upsize culvert, Create spillway / armor downstream side of road bed.	$50,000 - $200,000
Whites Bridge Road 500' east of Highland Road.	30" Culvert	Oct-96	Road was under 1 feet of water and approximately 1/3 of road base was washed away.	Vehicle and emergency vehicle access, safety hazard,	Undersized culvert,	Upsize culvert, Create spillway / armor downstream side of road bed.	$50,000 - $200,000

Westbrook – Mitigation Measures

Location	Type	Dates of known events	Description of event	Impacts	Cause	Proposed remedies	Cost estimate
Flooding							
Various	Various	--	Generalized flooding	Emergency vehicle access, safety hazard, infrastructure damage	Inadequate drainage system(s)	Improve drainage system(s)	$50,000 - $200,000

Windham – Mitigation Measures

Location	Type	Dates of known events	Description of event	Impacts	Cause	Proposed remedies	Cost estimate
Overroad flooding							
River Road just north of Windham Center Road	None	10/1996 11 inches of Rain Hurricane Bob	12" to 18"	Road Shut Down	Poor Drainage	Upgrade culvert on Windham Center Road	$50,000 - $200,000
River Road - Colley Wright Brook	Bridge	10/1996 11 inches of Rain Hurricane Bob	4 feet to 5 feet above road	Road Shut Down	Under size culvert plus Railroad bridge too small	Railroad Bridge and Culvert need upsizing	$200,000 - $1,000,000
Anderson Road & Inkhorn Brook	Box Culvert	10/1996 11 inches of Rain Hurricane Bob	2 feet over road	Road Shut Down Washout	Down stream clogged	Needs to be cleaned2 to 4 hundred feet downstream	$10,000 - $40,000
Falmouth Road and Pleasant River	Culverts	10/1996 11 inches of Rain Hurricane Bob	2 feet to 3 feet over road	Road Shut Down Washout	Too much water	Raise Road	$50,000 - $200,000
Route 302 and Colley Wright Brook	Bridge	10/1996 11 inches of Rain Hurricane Bob	12 inches	Road Shut Down	Under size	Upgrade and clean stream below	$100,000 - $400,000
Windham Center & Colley Wright Brook	Culverts	10/1996 11 inches of Rain Hurricane Bob - Floods often	12" to 18"	Road Shut Down Public Property	Undersized	Upgrade and clean stream below	$50,000 - $200,000
Windham Center & Black Brook	Culverts	10/1996 11 inches of Rain Hurricane Bob - Floods often	12" to 18"	Road Shut Down Public Property	Undersized	Upgrade and clean stream below	$50,000 - $200,000
Swett Road & Black Brook	Wood Bridge	10/1996 11 inches of Rain Hurricane Bob	12" to 18"	Road Shut Down Public Property	Undersized	Upgrade and clean stream below	$100,000 - $400,000

Location	Type	Dates of known events	Description of event	Impacts	Cause	Proposed remedies	Cost estimate
Falmouth Road & Baker Brook	Culverts	10/1996 11 inches of Rain Hurricane Bob	1 feet to 2 feet	Road Shut Down Public Property	Undersized	Upgrade and clean stream below	$50,000 - $200,000
Nash Road & Unknown Brook	Culverts	10/1996 11 inches of Rain Hurricane Bob	1 feet to 2 feet	Road Shut Down Public Property	Undersized	Upgrade and clean stream below	$50,000 - $200,000
Walter Partridge Road & Unknown Brook	Culverts	10/1996 11 inches of Rain Hurricane Bob	12 inches	Road Shut Down Public property	Undersized	Upgrade and clean stream below	$50,000 - $200,000
Anderson Road & Weeks Brook	Box Culvert	10/1996 11 inches of Rain Hurricane Bob	12" to 18"	Road Shut Down Public property	Undersized	Upgrade and clean stream below	$50,000 - $200,000
Nash Road & Route 302	Cross Culvert	10/1996 11 inches of Rain Hurricane Bob	12" to 18"	Road Shut Down Public property	Upgrade on Route 302	Upgrade and clean stream below	$50,000 - $200,000
River Road & Inkhorn Brook	Culverts	10/1996 11 inches of Rain Hurricane Bob	12" to 18"	Road Shut Down Public property	Undersized	Upgrade	$50,000 - $200,000
Anderson Road near Westbrook line	Culverts	unknown	12" to 18"	Road Shut Down Public property	Undersized	Upgrade and clean stream below	$50,000 - $200,000
Highland Cliff/Lincoln Weeks	Culverts	10/1996 11 inches of Rain Hurricane Bob	12" to 18"	Road Shut Down Public property	Undersized	Upgrade and clean stream below	$50,000 - $200,000
Route 202 a& Baker Brook	Culverts	10/1996 11 inches of Rain Hurricane Bob	12" to 18"	Road Shut Down Public property	Undersized	Upgrade and clean stream below	$50,000 - $200,000
Highland Cliff& Annie Leighton Brook	Culverts	10/1996 11 inches of Rain Hurricane Bob	12" to 18"	Road Shut Down Public property	Undersized	Upgrade Culvert	$50,000 - $200,000

CUMBERLAND COUNTY HAZARD MITIGATION PLAN

Location	Type	Dates of known events	Description of event	Impacts	Cause	Proposed remedies	Cost estimate
Land of Knod & Annie Leighton Brook	Culverts	10/1996 11 inches of Rain Hurricane Bob	12" to 18"	Road Shut Down Public property	too much water	Clean Stream below	$50,000 - $200,000
Webb Road & Black Brook	Box Culvert	10/1996 11 inches of Rain Hurricane Bob	12" to 18"	Road Shut Down Public property	too much water flow	Raise Bridge	$50,000 - $200,000
River Road South of Pleasant River	Culverts	10/1996 11 inches of Rain Hurricane Bob	12" to 18"	Road Shut Down Public property	Flooding	Upgrade and clean stream below	$50,000 - $200,000
River Road & Otterbrook	Double Culvert	10/1996 11 inches of Rain Hurricane Bob	12" to 18"	Road Shut Down Public property	Flooding	raise road	$50,000 - $200,000
Falmouth Road & Macintosh Brook	Culverts	10/1996 11 inches of Rain Hurricane Bob	12" to 18"	Road Shut Down Public property	Washout	Upgrade and clean stream below	$50,000 - $200,000
Cottage Road & Lantern Lane	Box Culvert	10/1996 11 inches of Rain Hurricane Bob	12" to 18"	Road Shut Down Public property	Washout	Upgrade and clean stream below	$50,000 - $200,000

Yarmouth – Mitigation Measures

Location	Type	Dates of known events	Description of event	Impacts	Cause	Proposed remedies	Cost estimate
Flooding - stream flow							
Stream crossing of Pratts Brook and Ledge Road	Stone Culvert		During heavy storm events, water backs up upstream of culvert at its inlet jeopardizing its structural integrity and roadway.	Emergency vehicle access, safety hazard.	Undersized culvert, debris in stream channel	Upsize culvert, remove debris	$50,000 - $200,000

In addition, the municipal emergency management directors and/or public works directors reported during the update's project review meetings that the following projects were implemented during the past five years (some of these activities have been noted within the Mitigation Projects Table in Section V).

Municipality	Project Completed
Bridgton	Upgraded culvert on Mill Brook Road
	Road improvements on Brown Mill Road
	Road improvements on Ingalls Road
	Upgraded culverts and road improvements on Mountain road
Cape Elizabeth	Installed arch culvert on Sawyer Road at Trout Brook
	System surcharge – Stormwater outfall on Scott Dyer Road
	Road improvements on Running Tide Road
	Upgrade culvert on Route 77 at Alewife Brook
	Upgrade culvert on Old Ocean Road at Alewife Brook
Cumberland	Upsized culvert and road improvements on Harris Road
	Upsized 5 culverts on Range Road
Falmouth	Installed bridge crossing on Woodville Road
	Upsized culverts on Woodville Road
Freeport	Upsized culverts and road improvements on Flying Point Road
	Upgraded culvert on Gay Drive
	Upgraded culvert on Desert Road
	Upgraded culvert on Varney Road
Gorham	Upgraded culverts at 17 locations around town
Gray	Installed box culvert on Weymouth Road
	Upgraded box culvert on McConkey Road
Long Island	Installed culvert on Island Ave.
	Installed culvert and road improvements on Apple Tree Lane
Portland	Upgrade storm drain system on Commercial Street
	Upgraded culvert and floodplain work on Lucas Street
	Obtained stormwater easement and installed culverts adjacent to
	Fall Brook Channel
	Installed fire suppression gear at Higgins Reclamation site
Raymond	Upgraded culvert and drainage on Mountain Road
	Installed road improvements on Elizabeth Avenue
Scarborough	Upgraded storm drain system at Higgins Beach
Sebago	Installed road improvements on Dyke Mountain Road
	Installed road improvements on Peabody Pond Road
South Portland	Performed storm drain system upgrades at 20 road locations
Standish	Upgrade culvert and drainage on White's Bridge Road
	Upgrade culvert and drainage on Route 114 on Stickey River
Westbrook	Floodplain improvements on River Walk at Ash Street
Windham	Floodplain improvements at 11 locations on various streams