

**HAZARD MITIGATION PLAN
2017 Update for
SOMERSET COUNTY, MAINE**



**Somerset County Emergency Management Agency
8 County Drive
Skowhegan, Maine 04976**

January, 2018

Somerset County Hazard Mitigation Plan – 2017 Update

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SECTION 1. INTRODUCTION

Geography

Incorporated in 1809, the territory (Somerset County) began as a part of Kennebec County, with portions later taken to form Piscataquis and Franklin Counties. Somerset County is as diversified in geography as it is in climate, demography, employment and history.

The 3,927 square miles of Somerset County contains 27 towns, 6 plantations and a portion of Maine's Unorganized Territory (comprising 83 "townships"). The County is bounded on the west by Franklin County and the Province of Quebec, Canada, on the north by Aroostook County, on the south by Kennebec County, on the southeast by Waldo County, on the east by Penobscot County and on the northeast by Piscataquis County.

The County begins in the foothills in the central portion of the state and expands approximately 135 miles in length south to north with approximately 30 miles in average width. This long expansion of the County will at times require two hours of travel to traverse the distance, depending upon the weather and seasonal road conditions.

The County also experiences two distinct weather patterns in all four seasons because of this expansive distance south to north. These weather patterns require the National Weather Service in Caribou (Aroostook County – northernmost county in the State of Maine) to report for the Northern Section of Somerset, while the National Weather Service in Gray (Cumberland County – on the southeast coast of Maine) to report for Central and Southern Somerset. Climate and geography will be an integral part of risk assessment when considering the effects of all hazards events upon the County.

Mountains

In the northern portion of the County lies the mountain regions with the noted peaks of Mount Bigelow on the southern and most western border as well as Moose, Fletcher, Johnson, Pierce, Spencer, Heald, Bald, Owl's Head, Sally, Moxie, the Bald Mountain range, Culcussa and Mucalsea Mountains. In the heavily forested northern portion of the County, both the Penobscot and St. John Rivers begin their trek towards the sea through two adjoining counties, Aroostook and Penobscot. These mountains receive record snow contributing to heavy spring snow melt and water runoff into the various river basins. Sometimes there is very little transition time from the ice and snow melt to mud season to the dry summer.

Valleys and Foot Hills

Moosehead Lake covers some of the eastern border of the Somerset County for about 40 miles in length. Many chains of ponds extend across the County and provide discharge into this great lake. The Kennebec River headwaters flow from this great water body and nearly half of the length of the Kennebec River (Commonly called the Kennebec River Valley) lies in the central portion of Somerset County. The Dead River, which flows in the western portion of the County feeds into the Kennebec from Flagstaff Lake. Many other major water bodies such as Pierce Pond flow into the Kennebec as it continues its flow through the County into Kennebec County and on to the Atlantic Ocean.

The Carrabassett and Sandy Rivers also flow to the Kennebec from the mountains of adjoining Franklin County. Winding through the low lying communities and road systems of Western Somerset, they pose a significant concern for flooding with spring runoff and ice jams.

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Along the eastern border of the County we encounter the Sebasticook Stream, yet another contributor to the Kennebec River in the southern portion of the County.

History

Somerset County has well documented historical significance to the nation as well as the State. Various officials sought to open a road between Acadia (Maine) and Canada from colonial times. In 1670, French Lieutenant Jean Talon of Canada and Governor Andigné de Grandfontaine of Acadia had such a road surveyed, but it was never built. Other proposals and surveys were made, but sea travel and portages continued to be the predominant method to go between the St. Lawrence and the Gulf of Maine.

In 1724, the Maine Tragedy of the Eighteenth Century occurred, with the killing of Father Sebastian Rasle and a massacre of Abenaki Indians along the banks of the Kennebec near the current village of Madison. In 1775, during the American Revolution, Benedict Arnold made his trek toward Quebec City along this same river.

After the War of 1812, two routes were proposed between Maine and Canada, one from Hallowell and one from Bangor. The Bangor route, like the Coos Road from Hallowell, would only be built in segments between towns, which caused its identity as a thoroughfare to be lost. Only the road through Somerset County would be built. The present U.S. Route 201, running south to north, known locally then as the Canada Road, is now a federal scenic and historic byway.

Population

According to the 2010 Census, Somerset County is the 9th largest county in the State of Maine. The County has a population of 52,228 living in the 3rd largest geographic County in the State of Maine.

Based on 2000 and 2010 Census figures, Somerset County's population grew from 50,888 people to 52,228 people, for a gain of 1,340 people or 2.6%. The County's growth rate was less than that of Maine as a whole (4.2%). Based on the 2010 Census, the population resides in 24,037 year-round housing units across the vast expanse of the County, yielding an average density of 13.3 people per square mile.

Somerset County's portion of the Unorganized Territory encompasses 2,620 square miles with a population density of 0.3 people per square mile. The remaining 27 towns and 6 plantations encompass 1,176 square miles with varying population density rates ranging from 1.3 to 146 people per square mile dependent upon remoteness from the major transportation routes in the southern region of the County.

Somerset County has a sizeable seasonal population. There are about 4,023 seasonal dwelling units. Assuming an average occupancy rate of four persons per household during peak season (July and August), there could be as many as 16,000 seasonal residents during that time period.

Employment

There are numerous employers in Somerset County, as well as many independent small businesses and self-employed residents providing economic stimulus and growth to the local economy. Although numerous residents travel outside the County boundaries on a daily basis for employment, the majority of residents work within the County.

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The Maine Department of Labor has identified the County's top employers as of the 4th quarter of 2015. The County's largest employers, by rank order, are:

Largest Employers	Category	Employee Range
Cianbro Corporation	Highway, street and bridge construction	501 to 1,000
New Balance Athletic Shoe	Footwear manufacturing	501 to 1,000
S.D. Warren	Paper, except newsprint, mills	501 to 1,000
Reddington Fairview Hospital	General medical and surgical hospitals	501 to 1,000
Wal Mart/Sam's Club	Discount department stores	501 to 1,000
North Country Assoc. Inc.	Nursing care facilities	1 to 500
Sebasticook Valley Health	General medical and surgical hospitals	1 to 500
Backyard Farms LLC	Other food crops grown under cover	1 to 500
Madison Paper Industries	Newsprint mills	1 to 500
Skills Inc.	Other residential care facilities	1 to 500

Small Businesses. Small businesses can generate many clients. For example, Somerset County is known as the largest maple syrup producing county in the U.S. The size of the business is not always proportional to the size of production.

Transportation

Highways. Somerset County has a major U.S. and Canadian Border Crossing Site (3rd largest commercial Maine US/Canadian port of entry) in Sandy Bay Township near Jackman, Maine. There are three major transportation routes: U.S. Route 2, east to west; U.S. Route 201, north to south from Canada; and Interstate 95, northeast to the south.

Airports. Somerset County has public airports in Pittsfield, Norridgewock and Jackman; and a private airport in Bingham.

Rail. Rail facilities include Pan Am Railways in the southern portion of the County and the Canadian Rail System of the Central Maine and Quebec Railway traversing the northern portion from west to east (also considered through the northern port of entry).

Hazardous Material Routes. All major vehicle routes are used to transport hazardous materials and waste products to and from many facilities within and from outside the County that supports the industrial and business hub of Somerset County. This hub is located predominately in the southern section of the County, mainly in seven communities: Anson, Fairfield, Hartland, Madison, Norridgewock, Pittsfield and Skowhegan. The two major waterways (the Kennebec and Sebasticook) also flow through the seven major communities, posing significant flood threats during the transition from winter to spring with rapid snow melt and spring run-off.

Climate, Tourism and Recreation

The major traffic routes in the County also provide the avenues of approach for the heavy four-season tourism industry that provides a substantial impact to the economic climate of the County. Somerset County's four seasons are as variable as its many types of tourism.

The population of Somerset County ebbs and flows throughout the year as the many seasonal or part time residents and recreation enthusiasts meld into the vast forests, rivers and lake shores of the heavily forested northern expanse of the County. The seasonal residents and tourists enjoy the famous camping, hiking, fishing, boating, whitewater rafting and ATV riding during the spring and

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summer, hunting for upland large game and birds during the fall, and skiing and snowmobiling during the winter.

Winter. Winter brings frequent record snowfalls and ice buildup. It also brings people for snowmobiling, skiing, and ice fishing. When winter gives way to spring, tourists arrive for white water rafting, spring fishing and camping. This seasonal change to spring can be sudden, bringing rapid snow and ice melt, which leads to ice jams and flood runoff conditions.

Spring. As the ground thaws in March, and/or is saturated with spring rains and runoff, mud season conditions lead to frequent vehicle route deterioration with frost heaves, washouts and secondary road closures. By the end of mud season, summer tourists arrive to camp, fish, boat and white water rafting.

Summer. The summer season greatly increases the population and the influx of tourists into the forested region can pose the threat of wildfires within the wildland urban interface. The threat of drought and drying winds can also increase during the summer months.

Fall. The fall season lures many people into the area to experience the radiant leaf colors of the local hardwoods. While the autumn provides hunters with a variety of sport opportunities, it can also bring the threat of late tropical storms and possibly hurricanes. The resulting high winds and storm damage can reach across the approximate 130 mile length of the County.

County Government

County Government includes the County Sheriff's Department and County Jail, County Clerk's Office, County Treasurer's Office, Registrar of Deeds, Probate Judge, Assistant District Attorney, the Emergency Management Agency, and the County Regional Communications Center.

The County also has responsibility for road maintenance and snow removal in the Unorganized Territory (83 townships), assessing County tax for municipalities and preparing an Unorganized Territory budget to the State of Maine for its operations. Municipalities are responsible for municipal tax collection, clerk's office, road maintenance and snow removal, refuse collection, land use planning, code enforcement, animal control, fire protection and cemetery maintenance.

Public safety and protection for the residents, as well as the industrial and business base of Somerset County, is dependent upon several State law enforcement agencies, the Somerset County Sheriff Department, the Somerset County Emergency Management Agency, four municipal law enforcement departments, local rescue and transporting ambulance departments, fire departments (many of which are strictly volunteer), and two hospitals.

The total responsibility for the non-cellular Enhanced 911 (E-911) calls for the year-round 52,228 residents and seasonal visitors rests entirely upon the services of the Somerset County Communications Center (SCCC) in Skowhegan. The SCCC also has the major public safety coverage responsibility for law enforcement, fire, EMS, and EMA services reaching the 52,228 residents.

Local Units of Government

There are a number of different kinds of local units of government in Somerset County. The following summary is based in part on the Maine Municipal Association's report "Local Government in Maine."

Towns. Somerset County contains 27 organized towns. Towns remain the cornerstone of local government. A Maine community becomes a town when it is incorporated by a special act of the

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legislature. At that time, it is given certain privileges and responsibilities. Under Home Rule, towns may take any action or change their form of government in any way not denied or precluded by state or federal law. The voters of the town constitute its legislative body. Day-to-day governance of towns has expanded from the original board of selectmen to include town managers, town councils, budget committees, municipal departments and various professional managers. In a small number of mostly larger towns, the council exerts legislative control without a town meeting. In others, a ballot vote is used to approve the budget rather than the open town meeting.

Plantations. There are 6 organized plantations in Somerset County. Plantations are a type of local government unique to Maine. They originated with the Massachusetts Bay Colony, and were at first intended to be a temporary government to help guide a community in changing from an unincorporated township to an incorporated town. In Maine, they have continued as a basic governmental unit in small rural areas. Plantations are typically rural, heavily forested, and sparsely populated. There is little demand in them for the full menu of public services provided in larger communities. Plantations are similar to towns in that voters at the annual meeting are the legislative body. During the meeting, assessors are elected to carry on the daily operation of government and function much as the selectmen in towns. Taxes are raised and appropriated and voters are registered. Plantations do not have the powers granted to municipalities under Home Rule, and do not have the authority to enact ordinances.

Unorganized Territory. Maine is unique among eastern states in having half its land mass, or more than 10 million acres, in an Unorganized Territory (UT). Most of it is in the northern, western and easternmost counties. There is no local, incorporated municipal government. Collectively, the UT has a population of 9,000 residents, which is 0.68 percent of the State's population.

Provision of services and property tax administration for the UT is shared among various State, County and local agencies. Law enforcement and public road maintenance is the County's responsibility. Taxes are paid to the State Property Tax division. The State's Land Use Planning Commission (LUPC) establishes basic rules. There are 83 townships in Somerset County's portion of the UT. In the year 2010, there were 838 year-round residents living in Somerset County's portion of the UT.

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Municipal Population

Towns (27)	Year Round Population		Square Miles 2010	Density/ Sq.mi. 2010	Median Age 2010	Total Dwell. 2010	Year Rd Dwell. 2010	House hold Density 2010
	2010	2000						
Anson	2,511	2,583	47.49	52.9	44.3	1,300	1,190	2.34
Athens	1,019	847	43.60	23.4	40.4	577	442	2.55
Bingham	922	989	34.91	26.4	45.7	600	509	2.15
Cambridge	462	492	19.32	23.9	48.3	252	213	2.35
Canaan	2,275	2,017	41.16	55.3	38.8	1,105	976	2.52
Caratunk	69	108	52.30	1.3	55.1	221	55	1.68
Cornville	1,314	1,208	40.73	32.3	43.1	624	567	2.46
Detroit	852	816	20.25	42.1	41.5	382	366	2.53
Embden	939	881	39.58	23.7	49.7	950	434	2.28
Fairfield	6,735	6,573	53.75	125.3	41.8	3,016	2,986	2.40
Harmony	939	954	38.67	24.3	49.4	608	440	2.35
Hartland	1,782	1,816	37.10	48.0	45.2	1,109	810	2.38
Jackman	862	718	41.26	20.9	44.8	726	480	2.19
Madison	4,855	4,523	51.88	93.6	44.0	2,478	2,161	2.32
Mercer	664	647	26.71	24.9	48.4	399	312	2.31
Moose River	218	219	40.07	5.4	45.6	157	112	2.29
Moscow	512	577	45.92	11.1	49.6	362	257	2.25
New Portland	718	785	43.88	16.4	48.9	605	381	2.08
Norridgewock	3,367	3,294	49.95	67.4	42.7	1,520	1,473	2.44
Palmyra	1,986	1,953	40.16	49.5	43.9	943	877	2.45
Pittsfield	4,215	4,214	48.18	87.5	40.2	1,828	1,769	2.45
Ripley	488	452	24.61	19.8	49.1	316	231	2.25
St. Albans	2,005	1,836	44.79	44.8	43.9	1,259	904	2.47
Skowhegan	8,589	8,824	58.84	146.0	42.2	4,234	4,085	2.25
Smithfield	1,033	930	19.90	51.9	49.2	727	484	2.29
Solon	1,053	940	39.65	26.6	45.4	657	512	2.29
Starks	640	578	31.59	20.3	42.1	395	301	2.34
Total, Towns	51,024	49,774	1,076.25	47.4	-	27,350	23,327	-
Plantations (6)								
Brighton Plt.	70	86	38.86	1.8	56.5	101	40	1.94
Dennistown Plt.	33	30	38.55	0.9	31.3	36	14	2.36
Highland Plt.	73	52	42.19	1.7	53.5	57	32	2.81
Pleasant Ridge Plt.	93	83	22.12	4.2	56.1	87	51	1.94
The Forks Plt.	37	35	39.57	0.9	61.5	230	29	1.76
West Forks Plt	60	47	48.69	1.2	54.8	124	41	1.82
Total, Plantations	366	333	229.98	1.6	-	635	207	-
Unorganized	838	781	2,618.2	0.3	-	2,584	503	-
Total Somerset	52,228	50,888	3,924.43	13.3	43.6	30,569	24,037	2.35

SECTION 2. PLAN ADOPTION

Multi-Jurisdiction Plan Adoption	
Requirement §201.6(c)(5): For multi-jurisdictional plans, each jurisdiction requesting approval of the plan must document that it has been formally adopted.	
Elements	A. Does the updated plan indicate the specific jurisdictions represented in it?
	B. For each jurisdiction, has the local governing body adopted the updated plan?
	C. Is supporting documentation, such as a resolution, included for each jurisdiction?

This is a multi-jurisdictional hazard mitigation plan. Municipalities that participated in the update process include:

Towns

- | | |
|-----------|--------------|
| Anson | Madison |
| Athens | Mercer |
| Bingham | Moose River |
| Cambridge | Moscow |
| Canaan | New Portland |
| Caratunk | Norridgewock |
| Cornville | Palmyra |
| Detroit | Pittsfield |
| Embden | Ripley |
| Fairfield | St. Albans |
| Harmony | Skowhegan |
| Hartland | Smithfield |
| Jackman | Solon |
| | Starks |

Plantations

- | | |
|-----------------------|---------------------------|
| Brighton Plantation | Pleasant Ridge Plantation |
| Dennistown Plantation | The Forks Plantation |
| Highland Plantation | West Forks Plantation |

Unorganized Territory

Note: On behalf of Somerset County's portion of Maine's Unorganized Territory, the County Commissioners participated in updating this Plan.

The adoption resolutions are on the following pages of this section.

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RESOLUTION

Whereas, natural and man-made disasters may occur at any time, we recognize that to lessen the impacts of these disasters we will save resources, property and lives in Somerset County;

And whereas the creation of a Multi-Jurisdictional Hazard Mitigation Plan is necessary for the development of a risk assessment and effective mitigation strategy;

And whereas, this multi-jurisdictional county of Towns, Plantations, and a portion of Maine's Unorganized Territory are committed to the mitigation goals and measures as presented in this plan;

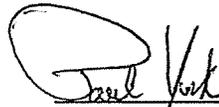
Therefore, the Fairfield Town Council, Pittsfield Town Council, the Boards of Selectmen of the other Incorporated Towns and the Boards of Assessors of the Plantations hereby adopt the Somerset County Hazard Mitigation Plan - 2017 Update; and

Therefore, Somerset County, acting on behalf of the Unorganized Territory within its boundaries hereby adopts the Somerset County Hazard Mitigation Plan - 2017 Update.

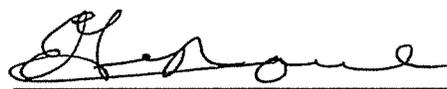
AUTHORIZING SIGNATURES

Town of Skowhegan

Paul Yark
Printed Name
Chairman
Position


Signature
10/09/2018
Date

E. Gene Rouse
Printed Name
Vice Chairman
Position


Signature
10/09/2018
Date

Betty Austin
Printed Name
Selectman
Position


Signature
10/09/2018
Date

SOMERSET COUNTY ME HAZARD MITIGATION PLAN - 2017 UPDATE

Roger Staples
Printed Name

Selectman
Position

Roger Staples
Signature

10/09/2018
Date

Vanessa York
Printed Name

Selectman
Position

Vanessa York
Signature

10/09/2018
Date

SOMERSET COUNTY ME HAZARD MITIGATION PLAN - 2017 UPDATE

SECTION 3. PLANNING PROCESS

Planning Process	
Requirement §201.6(b)(1): (The planning process shall include) an opportunity for the public to comment on the plan during the drafting stage and prior to plan approval.	
Element	A3. Does the plan document how the public was involved in the planning process during the drafting stage?

Throughout this Plan, the terms “community, jurisdiction” and “municipality” are used interchangeably. Each is understood to include cities, towns, plantations or Unorganized Territory.

The Somerset County Hazard Mitigation Plan - 2017 Update was a multi-jurisdictional collaborative effort. The Hazard Mitigation Planning Team sought participation through town mailings, surveys, planning meetings, field visits to potential project sites, postings on the Somerset County EMA website, emails, social media, and phone calls.

Participants at various meetings discussed county-wide and town-specific hazards and the probability and vulnerability of certain hazards. Groups also reviewed mitigation projects from the 2012 plan as well as new projects that have been added for the 2017 update, and discussed any additional projects that were not already identified.

Additional participation was solicited through phone and email correspondence and the Public Review and Comment session for any recommendations/comments.

The Planning Team provided expertise, data and assistance in updating the plan. The Hazard Mitigation Planning Team consisted of the following:

Somerset County Planning Team	
Mike Smith	Director, Somerset County Emergency Management Agency
Garrett Buzzell	Somerset County EMA Planner
JoAnn Mooney	Maine Emergency Management Agency (MEMA)
Tom Redstone	Maine Emergency Management Agency (MEMA)
Rich Rothe	Consultant

Hazard Mitigation Outreach Efforts

Hazard Mitigation Survey. In 2016, Somerset County EMA distributed a survey to its communities, asking about specific areas subject to flooding, winter and summer storms, and wildfire as well as “other” concerns they might have. Survey responses, and the list of participants and their positions in the respective communities, included:

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Summary of Survey Respondents	
Town	Survey Participant
Athens	Mark Munn, Selectman; Dwight Weese Road Commissioner
Cambridge	Carol Laplante
Canaan	Garrett Buzzell, Selectman
Embden	Robert Dunphy, Code Enforcement Officer
Fairfield	Duane Bickford, Fire Chief & EMA Director
Hartland	Rusty Dickey, EMA Director
Jackman	Matthew Pineo, Town Manager
Madison	Marc Leslie, EMA Director
Mercer	Richard Smith, EMA Deputy Director
Moscow	Donald Beane, Selectman
New Portland	Stacie Rundlett, EMA Director
Norridgewock	Richard LaBelle, Town Manager
Palmyra	Priscilla Jones, Administrative Assistant to Selectmen
Pittsfield	Bernard Williams, Fire Chief & EMA Director
Skowhegan	Gregory Dore, Road Commissioner; Shawn Howard, Fire Chief
Smithfield	Nicole Clark, Administrative Assistant to Select board
Starks	Paul Frederic, Selectman
Unorganized Territory	David Spencer, U.T. Coordinator

Kick-off Meeting, July 13, 2016. To promote public participation, a kick-off meeting was held in Skowhegan during the evening of July 13, 2016. Mike Smith, Somerset County EMA Director, opened the meeting and welcomed everyone in attendance. He stated that work is now underway on updating the 2012 Somerset County Hazard Mitigation Plan.

JoAnn Mooney provided an overview of what's in the current plan and stressed the importance of community involvement in the planning process. She reported that typical projects such as culvert upgrades are experiencing lengthy environmental reviews and that site visits with the regulators can help address potential issues before applications are developed. She also reported that generators are now eligible projects for critical facilities and should be included as projects where applicable. Communities should view the Update as an opportunity to identify projects that will help them avoid or reduce future damages even if they aren't eligible for federal funding.

The Planning Team discussed the Hazard Mitigation Plan update, the hazards to be profiled, and the importance of updating and re-prioritizing the list of local projects. People who attended the meeting reviewed the list of projects and the maps for their respective jurisdictions. The list of participants and their positions in the respective communities, included:

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Kick-off Meeting Attendees July 13, 2016, Skowhegan, Maine		
Town	Representative	Title
Embden	Robert Dunphy	Code Enforcement Officer
Fairfield	Duane Bickford	Fire Chief, EMA Director
Madison	Tim Curtis	Town Manager
Madison	Marc Leslie	EMA Director
Mercer	Jesse Crandall	Planning Board
Mercer	Richard Smith	EMA Deputy Director
Norridgewock	Richard LaBelle	Town Manager
Pittsfield	Bernard Williams	Fire Chief, EMA Director
St. Albans	David Crocker	EMA Director
Skowhegan	Shawn Howard	Fire Chief
Smithfield	Robert Crosby	Animal Control Officer
Starks	Paul Frederic	Selectman
Somerset County EMA	Michael Smith	Director
Somerset County EMA	Garrett Buzzell	EMA Planner
Somerset County	David Spencer	Unorganized Territory Coordinator
MEMA	JoAnn Mooney	State Hazard Mitigation Officer
MEMA	Tom Redstone	Deputy State Hazard Mitigation Officer
Consultant	Rich Rothe	Consultant

Planning Meeting, September 22, 2016. A planning meeting was held in Skowhegan during the evening of September 22, 2016. Mike Smith opened the meeting and welcomed everyone in attendance. Since there were a number of people at the meeting who were not at the kick-off meeting, he explained that the County is now in the process of updating the 2012 Somerset County Hazard Mitigation Plan.

JoAnn Mooney provided an overview of the planning process. She discussed the Hazard Mitigation Plan update, the hazards to be profiled, and the importance of updating and re-prioritizing the list of local projects. People who attended the meeting reviewed the list of projects and the maps for their respective jurisdictions.

Paul Frederic, Selectman from the Town of Starks, gave a presentation of the Town's success in applying for a grant from the Department of Environmental Protection for a culvert upgrade. He emphasized the importance of taking advantage of various grant programs to help the community make improvements that it might not otherwise afford.

People in attendance at the meeting included the following:

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Planning Meeting September 22, 2016, Skowhegan, Maine		
Town	Representative	Title
Bingham	William Shaw	EMA Director
Bingham	Steve Steward	Selectman
Embden	Robert Dunphy	Code Enforcement Officer
Madison	Tim Curtis	Town Manager
Norridgewock	Richard LaBelle	Town Manager
Palmyra	Priscilla Jones	Administrative Assistant to Selectmen
Pittsfield	Bernard Williams	Fire Chief, EMA Director
Skowhegan	Betty Austin	Selectwoman
Starks	Paul Frederic	Board of Selectmen
Somerset County EMA	Michael Smith	Director
Somerset County EMA	Garrett Buzzell	EMA Planner
MEMA	JoAnn Mooney	State Hazard Mitigation Officer
MEMA	Tom Redstone	Deputy State Hazard Mitigation Officer
Consultant	Rich Rothe	Consultant

Individual Municipal Contacts. In addition to the kick off and planning meetings, and in recognition of the distances between the towns and the difficulty of arranging group meetings, the Somerset County Emergency Management Planner communicated individually with a number of municipalities between December 15, 2016, and June 30, 2017, either by phone, email, and/or by meeting. This one-to-one arrangement gave the participating towns the full meeting time to review the draft Somerset County Hazard Mitigation Plan – 2017 Update including the list of projects specific to their jurisdiction. Communication with the following municipalities included:

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Individual Municipal Contacts			
Town	Name	Position	Type of Contact
Anson	Artie Lane	Roan Commissioner	Phone
	Doug Cahill	EMA Director	Phone/Email
Athens	Mark Munn	Selectman	Phone
	Dwight Weese	Road Commissioner	Phone
Bingham	Bill Shaw	EMA Director	Phone/Email
	Steve Steward	Selectman	Phone
Canaan	Garrett Buzzell	Selectman	Self
	Mike Robinson	Road Commissioner	Meeting
Caratunk	Elizabeth Caruso	Selectman	Phone/Email
Dennistown Plantation	Carolyn Nadeau	EMA Director	Phone
Detroit	Kathy Watson	Clerk	Phone
	Ramon Knowles	EMA Director	Phone
	Don Chute	Fire Chief	Phone/Email
Harmony	Audry Bemis	EMA Director	Phone/Email
Hartland	Rusty Dickey	EMA Director	Phone/Email
Highland	Alverta Dyer	EMA Director	Phone/Email
Jackman	Matthew Pineo	Town Manager	Phone/Email
	Bill Jarvis	Fire Chief	Phone
Madison	Marc Leslie	EMA Director	Meeting/Email
	Tim Curtis	Town Manager	Meeting/Email
Mercer	Richard Smith	EMA Deputy Director	Meeting/Phone
	Jesse Crandall	EMA Director	Phone
Moscow	Bill Shaw	EMA Director	Phone/Email
	Donald Beane	Selectman	Phone/Email
New Portland	Stacie Rundlett	EMA Director	Phone/Email
Norridgewock	Richard LaBelle	Town Manager	Phone/Email
	Joe Bishop	Public Works	Phone
Palmyra	Don Chute	Fire Chief/EMA Director	Meeting/Phone
Pittsfield	Bernard Williams	Fire Chief/EMA Director	Phone/Meeting/Email
Pleasant Ridge	Doraine Mathieu	EMA Director	Phone/Email
	Marlene Mellow	Assessor	Phone
Ripley	Everett Hibbard	Road Commissioner	Phone
Skowhegan	Gregory Dore	Road Commissioner	Meeting/Phone/Email
	Shawn Howard	Fire Chief	Meeting/Email
Smithfield	Nicole Clark	Administrative Asst.	Phone/Email
Solon	Duane Rollins	Fire Chief	Phone/Email
	Mike Foster	Road Commissioner	Phone
Starks	Paul Frederic	Selectman	Meeting/Phone/Email

Public Comment and Review Session

On October 12, 2017, at 9:00 a.m., Somerset County EMA held a final public comment and review session on the draft Somerset County Hazard Mitigation Plan - 2017. The plan and notice of the review session were posted on the EMA website and in local newspapers, and local officials were

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notified by email. Members of the public were advised that they could phone in their comments on a "1-877" line.

EMA Staff members attending the meeting and participating in the call-in session included Mike Smith, Director, Garrett Buzzell, EMA Planner, and Kim Dellarma, Deputy Director. MEMA staff member JoAnn Mooney, and consultant Rich Rothe also attended the call-in session.

The Town Manager of Palmyra participated in the session. She reported that Shy Road was added as a new project, but has since been completed. She requested that a new project, Libby Hill Road, be added to upsize existing culverts to protect the Newport water supply from erosion and sedimentation.

There was discussion and general agreement to revise the County-wide flooding mitigation measure entitled "Wyman Dam" to continue working with dam owners to assess the need for additional notification systems. All of the notification sirens at the Bingham Fire Station are now working, but this may not be sufficient to alert everyone in potential inundation areas of an emergency situation.

The Public Comment and Review Session concluded about 9:45 a.m.

Summary of Local Participation

The following table documents how each jurisdiction participated in the preparation of this plan. The Unorganized Territory was represented by Somerset County.

Summary of Local Participation				
Key:				
X = Yes				
A = Assessor				
EMA = EMA Director				
Chief = Fire Chief				
RC = Road Commissioner or Public Works Director				
S = Selectman				
TM = Town Manager				

Jurisdiction	2016 Survey	EMA Meetings	Individual Municipal Contacts	Projects in Plan Verified by:
Anson			X	RC, EMA
Athens	X		X	S, RC
Bingham		X	X	S, EMA
Brighton Plantation				RC
Cambridge	X			RC
Canaan	X		X	S, RC
Caratunk			X	S
Cornville				RC
Denniston Plt.			X	EMA
Detroit			X	EMA, Chief, Clerk
Embden	X	X		RC
Fairfield	X	X		RC
Harmony			X	EMA
Hartland	X		X	EMA

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Jurisdiction	2016 Survey	EMA Meetings	Individual Municipal Contacts	Projects in Plan Verified by:
Highland Plt.			X	EMA
Jackman	X		X	TM, Chief
Madison	X	X	X	TM, EMA
Mercer	X	X	X	EMA
Moose River				RC
Moscow	X		X	S, EMA
New Portland	X		X	EMA
Norridgewock	X	X	X	TM, RC
Palmyra	X	X	X	Chief/EMA
Pittsfield	X	X	X	Chief/EMA
Pleasant Ridge Plt			X	A, EMA
Ripley			X	RC
St. Albans		X		RC
Skowhegan	X	X	X	RC, Chief
Smithfield	X	X	X	A
Solon			X	RC, Chief
Starks	X	X	X	S
The Forks Plt.				RC
West Forks Plt.				RC
Unorganized Terr.				RC

Opportunity for Neighboring Communities, Regional Agencies

Requirement §201.6(b)(2): (The planning process shall include) 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.

Element	A2. Does the Plan document an opportunity for neighboring communities, local and regional agencies involved in hazard mitigation activities, agencies that have the authority to regulate development as well as other interests to be involved in the planning process?
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Since this is a multi-jurisdictional plan, all kick off meetings were with neighboring communities, either adjacent to each other or within the County. Opportunities for local and regional agencies involved in hazard mitigation activities, agencies that have the authority to regulate development as well as other interests to be involved in the planning process were given in the form of town mailings, the Somerset County EMA website, emails and phone calls. Many of the local officials involved in the 2017 update of the plan work in various agencies, businesses, academia and nonprofit organizations.

SECTION 4. RISK ASSESSMENT

Risk Assessment

Requirement: §201.6(c)(2): (The plan must include) a risk assessment that provides the factual basis for activities proposed in the strategy to reduce losses from identified hazards. Local risk assessments must provide sufficient information to enable the jurisdiction to identify and prioritize appropriate mitigation actions to reduce losses from identified hazards.

Introduction

In compliance with 4 Code of Federal Regulations, Part 201.6(c)(2), this section of the Plan identifies, profiles and assesses the vulnerability of Somerset County to natural hazards. Our local risk assessments provide sufficient information to enable Somerset County to identify and prioritize appropriate mitigation actions to reduce losses from identified hazards. This plan includes detailed descriptions of all the potential hazards that could affect Somerset County, along with an analysis of Somerset County's vulnerability to those identified hazards. Specific information about numbers and types of structures, potential dollar losses, and an overall description of land use trends in Somerset 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.

Climate

No risk assessment of Somerset County's flood and related hazards would be complete without first considering its climate and geography. Factors such as seasonal temperatures, annual precipitation, prevailing wind directions and geographical features can all profoundly affect both the occurrence and severity of flooding and other natural hazards.

The northern two-thirds of Somerset County is located in the northernmost of Maine's three climatic divisions. The Northern Division encompasses the northernmost 17,916 square miles (54%) of the State. This division is least affected by marine influences.

The southern third of Somerset County is located in the Southern Interior Division which includes 10,307 square miles adjacent to the Northern Division and represents 31% of the state's area.

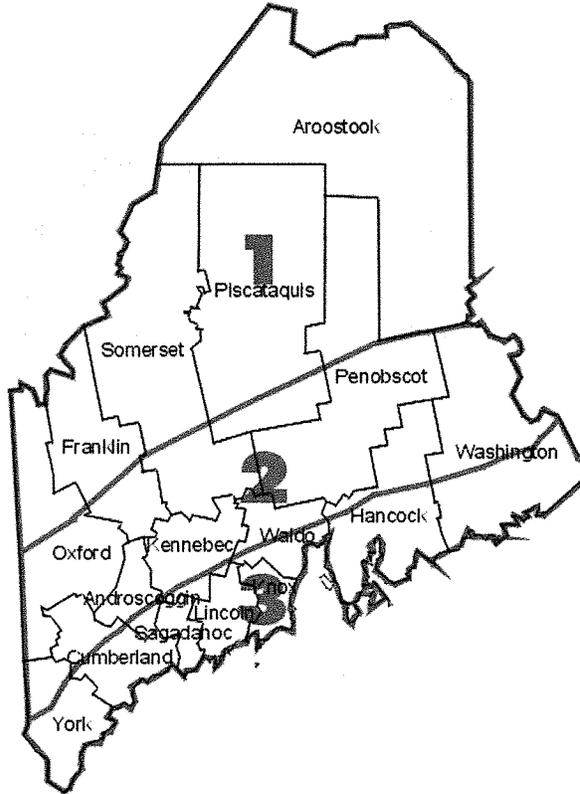
Temperature: Average annual temperature is about 41 degrees Fahrenheit. Temperatures average about 64 degrees Fahrenheit in July and August, and about 18 degrees Fahrenheit in January and February.

Precipitation: Somerset County's average amount of precipitation, based on long-term records dating back to 1895, is 42.6 inches. This includes the conversion of all snowfall to a water-equivalent. Average monthly precipitation is between three and four inches, with November being the wettest month, and February being the driest month.

Prevailing Winds: Prevailing wind direction varies with both season and location. Local influences such as orientation of a valley also may play a key role in dictating prevalent wind direction at any one location. Most of the County is under northwest to west-northwest winds throughout much of the year and particularly during the winter. During the summer, southwest to southerly winds may become quite frequent.

Climate Divisions of Maine

Maine



Geography

Overall, the terrain across much of Somerset County is hilly. The present-day landscape is a direct result of glacial erosion and deposition from the large ice sheets that completely covered Maine as recently as about 14,000 years ago. A variety of glacial deposits cover the County, providing a rich variety in the overall landscape as well as abundant sand and gravel for construction material. Many of these deposits also are excellent sources of ground water (that is, aquifers) for household and industrial water supplies. In addition, glacial deposits and erosion are directly responsible for the lakes found in Somerset County.

Extensive wetland areas that provide habitat for many ecosystems are also a result of past glaciations in combination with existing climatic conditions. Maine is the most forested state in the United States with 90% of its land area in woodland. Historically, this has supported a considerable lumber and paper products industry. Many logging roads provide the only access into vast unsettled areas.

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These forests also provide habitat for abundant wildlife, and together with the large number of lakes are a great resource for sports and recreation.

Climate Variation

The purpose of this part of the plan is not to debate climate change or its causes, but to provide an overview of how climate has changed over time, as documented in various scientific studies, and how that change may be impacting the occurrence and severity of natural hazards in Somerset County. Projecting future climate change can be problematic because, as stated in the document "Maine's Climate Future, 2015 Update," by the University of Maine, "Climate projections are uncertain for several reasons: natural climate variability, incomplete descriptions of the climate system in computer models, and difficulty in predicting future greenhouse gas emissions" (page 6).

Temperature Changes: Excerpts from the report "Maine's Climate Future, 2015 Update," prepared by the University of Maine, include the following:

"Average annual temperature across Maine warmed by about 3.0 degrees F between 1895 and 2014...Although the overall warming trend...is clear, Maine's temperature signal also features significant year to year fluctuations superimposed on a distinct pattern with periods of relative cold...and warmth..." (page 2).

"Numerical models of the global atmosphere and ocean have been in development for over three decades. The most sophisticated of these models, such as those used by the Intergovernmental Panel on Climate Change (IPCC)...predict that annual temperature will increase another 3.0 – 5.0 degrees F...across Maine between now and 2050" (page 3).

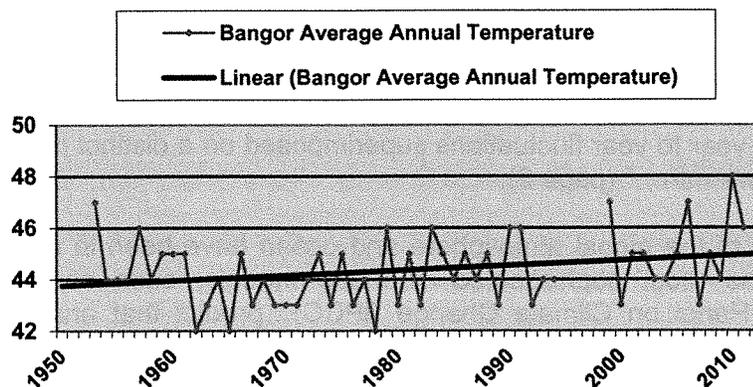
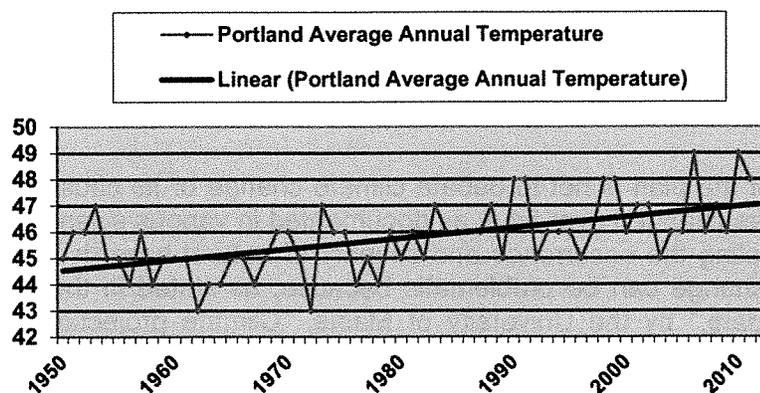
"Maine's warm season...increased by two weeks from the early 1900s to the 2000s. Global climate models predict that the warm season will increase by an additional two weeks over the next 50 years. Winter is warming at a faster rate than summer" (page 3).

The following is an excerpt from the Maine State Hazard Mitigation Plan 2013 Update: "The National Weather Service in Gray, Maine, has compiled monthly average and annual average temperatures for a long period of time at three locations in Maine: The Portland International Jetport (1940-present); the Bangor International Airport (1953-1994 and 1999-present), and the Caribou Airport. The data from all three measuring stations show that annual average temperatures have gradually increased at all three locations...although the increase has been greatest at the Portland Jetport station" (page 3-4).

While none of these locations are close to Somerset County, it is reasonable to assume that trends occurring throughout Maine are also occurring in Somerset County.

According to "Maine's Climate Future, 2015 Update," the impacts of rising temperature in Maine include an increase in Lyme disease resulting from more suitable habitat for deer ticks and their hosts, and stresses on Maine's plant and animal species.

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Precipitation Changes: Excerpts from the report “Maine’s Climate Future, 2015 Update,” include the following:

“Since 1895, total annual precipitation has increased by about six inches...or 13%, with most of the additional amount falling in summer and fall. IPCC models predict that precipitation will continue to increase across the Northeast by 5-10% between now and 2050, although the distribution is likely to vary across the climate zones. Model predictions show greater increases in precipitation in interior Maine...whereas measurements to date from the weather stations across the Maine landscape show that precipitation has increased most along the coast” (page 8).

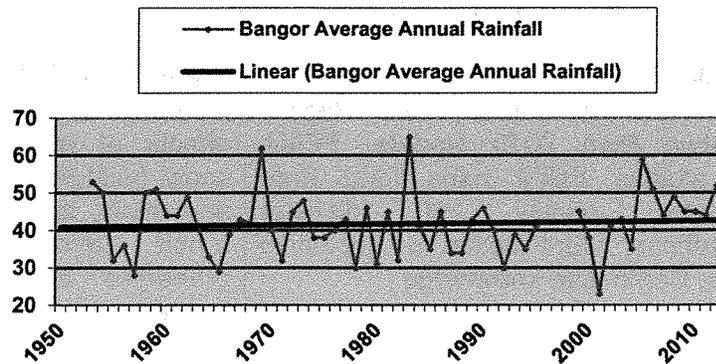
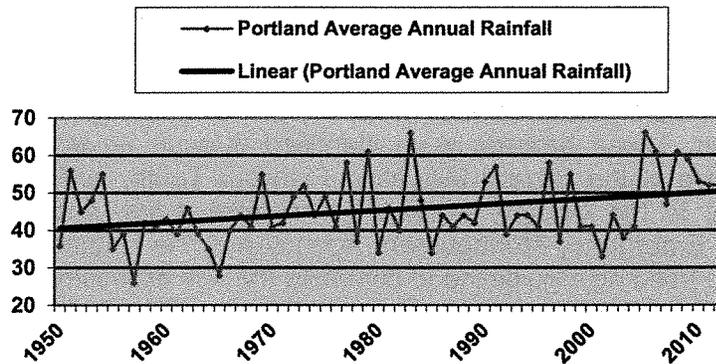
“A significant increase in extreme precipitation events (more frequent and intense storms) has been observed across Maine and other parts of the eastern U.S....we define an extreme precipitation event for this analysis as one in which two or more inches (five or more cm) of precipitation falls within a 24-hour period. Historical measurements show that extreme events vary across the state, occurring most often in the coastal zone and western mountains. The northernmost sites, like Millinocket and Caribou, show fewer extreme events overall, but with similar relative increases over the most recent decade” (page 9).

“In general, the snow season has declined on average across Maine since the late 1800s...On a simplified linear trend, the snowfall has declined by about 15%....although the amount and duration of snow may decline in the future, extreme snowfall events with significant accumulation – strong nor’easters – are likely to increase in frequency” (page 10).

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"The Northeast has experienced a greater recent increase in extreme precipitation than any other region in the U.S.; between 1958 and 2010, the Northeast saw more than a 70% increase in the amount of precipitation falling in very heavy events, taxing an already stressed and aging infrastructure" (page 11).

The following is an excerpt from the Maine State Hazard Mitigation Plan 2013 Update: "The National Weather Service has also compiled monthly average and annual average precipitation at the Portland Jetport, the Bangor International Airport and the Caribou Municipal Airport. The data from all three measuring stations show that average annual precipitation ...has gradually increased at all three locations...The increase has been greatest at the Portland Jetport and the Caribou Municipal Airport" (page 3-5).



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Description of Hazards	
Requirement §201.6(c)(2)(i): (The plan shall include) a description of the type, 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.	
Element	B1. Does the Plan include a description of the type, location and extent of all natural hazards that can affect each jurisdiction?
	B2. Does the plan include information on previous occurrences of hazard events and on the probability of future hazard events for each jurisdiction?

The Somerset County Hazard Mitigation Team has identified all of the natural hazards that could potentially affect Somerset County. The list is based on FEMA's list of natural hazards, although some of the natural hazards have been grouped together. For example, blizzards, ice storms, nor'easters and snow storms are grouped under winter storms, even though nor'easters can occur at other times of the year. These hazards were identified through an extensive process that utilized input from members of the Hazard Mitigation Planning Team, public input, researching past disaster declarations in the County, a review of current maps, and a risk assessment completed by the County Emergency Management Agency and the Hazard Mitigation Planning Team. Past disasters were used as a guideline to complete the risk assessment. Other sources of information include a review of the Maine State Hazard Mitigation Plan 2013 update, and hazard mitigation meetings held in the County.

Hazards Profiled in this Plan		
Natural Hazards	How Identified	Comments - Why Identified
Flooding and Dams	Review of the Maine State Hazard Mitigation Plan 2013 Update, FEMA flood studies, FIRM maps, input from residents, review of disaster declarations, identification of repetitive losses, Committee knowledge	Flooding is associated with the effects of hurricanes, ice and snow build-up in the mountains and rivers, ice dams and spring runoff. Several repetitive loss properties and roadways are located in the County. The County contains eight major rivers and many streams and lakes, and is located in the foothills and mountains. It also has dams of high, significant and low hazard potential with some requiring FERC or MEMA EAPs.
Severe Winter Storms	Review of past disaster declarations, inputs from residents, risk assessments, Committee and local knowledge, records from 1998 ice storm, and Review of the Maine State Hazard Mitigation Plan 2013 Update.	Maine is frequently hit with major nor'easter blizzards. In 1998, a major ice storm hit Maine, knocking out power in many locations for days. Being in the foothills and mountains, the County is subjected to a wide range of weather conditions. The impacts of winter storms include erosion and wind damage, road and culvert washouts.

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Hazards Profiled in this Plan		
Natural Hazards	How Identified	Comments - Why Identified
Severe Summer Storms, hurricanes	Review of disaster declarations, inputs from residents, risk assessments, Committee and local knowledge, and Review of the Maine State Hazard Mitigation Plan 2013 Update.	Somerset County is frequently hit with thunderstorms, heavy wind and rain storms, hail and lightning, and less frequently by hurricanes. Since 1938, damage from hurricanes has been minimal. Summer storms are often accompanied by high winds, road and culvert washouts. Flooding from these events will be discussed under the flooding hazard.
Wildfires	Review of Maine Forest Service records, input from residents, risk assessments, Committee and local knowledge, and Review of the Maine State Hazard Mitigation Plan 2013 Update.	Much of the County is covered with forests. In 1957, there were several large forest fires in our County involving over 3,800 acres. Wildfires have been numerous though small since that time.

The following table identifies the hazards that were eliminated from further consideration in the plan, due to a lack of historical evidence, and lack of overall county-wide severity or a low likelihood for the event to occur. Although these disaster events were not profiled in the hazard mitigation plan, it does not certify that any of these events will not or could not occur and cause great damage. The goal of the Somerset County Hazard Mitigation Planning Team is to keep this plan relevant by profiling the top four hazards.

Hazards not Profiled in this Plan		
Natural Hazards	How Identified	Reason for Non-inclusion
Landslides	Review of Historical Records, Maine Geological Survey records & State EMA records	No known major landslides.
Blight/ Infestation	Review of State Entomological Office historical records, Inputs from residents	Though the County is heavily dependent on its forest industry, there are no historical records of major damage to these products that have caused serious economic conditions.
Drought	Review of State EMA records, review of NOAA records	Severe, multi-year droughts occurred in Maine in the 1960's, 1980's and from 2000 to 2003. As of this writing, 2016 was also a drought year. However, the effects of drought, such as wells running dry in some areas, have never been

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Hazards not Profiled in this Plan		
Natural Hazards	How Identified	Reason for Non-inclusion
		sufficient to create disaster conditions in Somerset County, although they have increased the danger of wildfires. Drought is not profiled separately because its impacts are considered in the profile of wildfires.
Earthquake	Review of Maine Geological Survey records	Although Earthquakes are common in Maine, no significant damaging movement has occurred in 20,000 years. All of the earthquakes that occur in Maine are intra-plate earthquakes. Maine is far inland from the boundaries of the North American plate which extends from the Mid-Atlantic ridge on the east to the western boundary of the U.S. Maine is near the middle of the plate and is therefore not subject to the frequent, deep and large earthquakes that are generated by the edges of the tectonic plates bumping into each other.
Extreme Heat	Review of State EMA records Review of NOAA records	Extreme heat is not common in Somerset County
Subsidence/ Avalanche & Sinkhole	Review of Maine Geological Survey records	There are many mountains in the County that hold large amounts of snow which could create avalanches in undeveloped areas. There have been no known cases of subsidence or sinkhole incidents in Somerset County.
Tornado	Review of NWS records	On average 1-2 tornadoes occur in Maine each year, yet there has been no loss of life or major damages in many years.
Winds	Review of NWS records, State plan, local surveys	Strong winds associated with severe winter and summer storm events are included in those profiles.

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FLOODING

Somerset County is subject to flooding. The Kennebec River and its tributaries (the Carrabassett and Sandy Rivers in the western part of the County, and Sebec Stream in the southern part of the County) create flooding conditions during spring runoff and as a result of ice jams.

Flooding is often caused by winter runoff from heavy rain events that melt the snow pack quickly. The runoff quickly overwhelms the wetlands, ponds, lakes, streams and rivers and spreads to the neighboring surface areas. The soil is still in a state of frozen permafrost, which eliminates any soil infiltration. This flooding undercuts or overtops adjacent roads. Typically, this road damage is not major, though it can absorb the municipal road maintenance budget for an entire year and does happen in several of the towns every year.

General Definition. A temporary inundation of normally dry land as a result of: 1) the overflow of inland waters; and/or 2) the unusual and rapid accumulation or runoff of surface waters from any source. Note: the nature of Somerset County's geology and hydrology is such that flooding is usually fast rising but of short duration.

Types of Flooding in Somerset County. There are several different types of potential flooding in Somerset County:

- **Beaver Dam Flooding:** Flooding resulting from back-up and overflow of water resulting from beaver dams.
- **Dam failure:** The sudden release of water resulting from structural collapse or improper operation of the impounding structure. Dam failure can cause rapid downstream flooding, loss of life, damage to property, and the forced evacuation of people.
- **Flash flood:** A flood event occurring with little or no warning where water levels rise rapidly due to heavy rains, ice jam release, or rapid snow melt.
- **Ice jam:** An accumulation of floating ice fragments that blocks the normal flow of a river. During a thaw or rainstorm, the rapid increase in discharge from snow melt and/or rainfall can rapidly lift and break up a thick ice cover and carry it downstream as an ice run. Ice runs can jam in river bends or against the sheet ice covering flatter reaches. The resulting ice jams can block flow so thoroughly that serious flooding may result within an hour of their formation. Failure of an ice jam suddenly releases water downstream. Damages from ice jam flooding usually exceed those of clear water flooding because of higher than predicted flood elevations, rapid increase in water levels upstream and downstream, and physical damage caused by ice chunks. Moving ice masses can shear off trees and destroy buildings and bridges above the level of the flood waters.
- **Lacustrine:** (Lake Flooding) occurs when the outlet for the lake cannot discharge the flood waters fast enough to maintain the normal pool elevation of the lake. During a base flood event, normal increases in water surface elevations on most Maine lakes and ponds range from 1 to 5 feet. However, in Maine there are some examples where the base flood event will reverse the flow of the outlet stream. In such instances, river and base flood elevations can rise more than 15 feet above the normal pool. While this can impact individual sport camps built near the water's edge, there are no records of major damages so this type of flood will not be further addressed in the Plan.
- **Riverine/riparian:** Periodic overbank flow of rivers and streams, usually the result of spring runoff, but can also be caused by major rain storms. This is the major type of flooding in Somerset County.
- **Urban:** Overflow of storm sewer systems, usually due to poor drainage, following heavy rain or rapid snow melt. The combined sanitary and storm water systems that some urban areas installed years ago cause flooding of sanitary sewerage when riparian floods occur. Runoff is

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increased due to a large amount of impervious surfaces such as rooftops, sidewalks and paved streets.

Location of Flooding Hazard

The Kennebec River is one of Maine's two most vulnerable rivers to flooding. The Kennebec River rises from the headwaters of Moosehead Lake in Piscataquis County and courses through five counties before joining the Androscoggin River in Merrymeeting Bay and emptying into the Atlantic Ocean. Dams such as Wyman Station Dam in Moscow control the upper part of the Kennebec River basin, which drains about one fifth of the State. The dams have also spawned a river rafting industry that depends on the timed releases of water. The basin below the dams is largely uncontrolled, however, and this affects the floodplains of downstream communities. The Flagstaff dam in The Forks Plantation, is the only dam with any capacity to store flood waters. This dam mitigated the damages caused by the flood of 1987.

Somerset County towns located along the Kennebec River, from south to north, include Skowhegan, Norridgewock, Starks, Anson, Madison, Embden, Solon, Bingham, Moscow and Caratunk. North of Embden, a number of plantations and a portion of Maine's Unorganized Territory also border the Kennebec. Flooding can occur in any one of the aforementioned communities and areas.

Extent (Severity) of the Hazard

Extent of the Hazard from Dam failure. Maine dams were constructed incrementally over a period of 300 years. Businesses harnessed the abundant fast flowing rivers and rocky rapids for the development of energy and transportation. Many dams throughout the Country are now aged, and in Maine the majority of these structures are nearly 100 years old and beyond the normal design life of civil engineering works. Many are low head dams constructed using local materials of stone, timber and earth. Dam failure is not a frequent occurrence, but it can and does occur. A major issue raised by attendees at a public hearing held on October 28, 2011, is that the owner of Wyman Dam (an earthen dam) has not taken responsibility for maintaining the dam-failure emergency notification siren; the siren would not be heard by everyone; and many people would not know what the siren meant or that they needed to evacuate their homes in a matter of minutes.

Regarding the possibility of flooding from dam failure, MRSA Title 37-B, Chapter 24, also known as Maine's Dam Safety Law, classifies dams into three hazard potential ratings: high, significant and low. Each rating carries different responsibilities for the dam owners and situational awareness on the part of downstream residents and businesses. Dam owners with "high" or "significant" potential hazard ratings must produce an emergency action plan (EAP) and forward it to MEMA for compliance with the law. The primary purpose of the EAP is to alert and warn potentially affected residents and businesses in the listed "call down area" when there is a threat of failure or actual breach. Copies are kept by the owner, relevant local, county and state agencies and must be updated regularly. See definition excerpts from the law in the table below:

Hazard Ratings	Excerpts from Dam Safety Law Definition
High	"...will probably cause loss of human life;"
Significant	"...no probable loss of human life but can cause major economic loss..."
Low	"...no probable loss of human life and low economic...losses"

In Somerset County, there are six High Hazard dams and seven Significant Hazard dams, as shown in the following tables.

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High Hazard Dams in Somerset County						
MEMA ID	Dam Name	Other Name	Dam Owner	Town	River	Regulated By
570	Brassua	-	FPLE Maine Hydro LLC	Not applicable	Moose River	FERC
430	Flagstaff	Long Falls	FPLE Maine Hydro LLC	The Forks Plt	Dead River	FERC
370	Waverly	Upper	Pittsfield	Pittsfield	Sebasticook River	FERC
462A	Weston-North Channel	-	FPLE Energy Maine Hydro	Skowhegan	Kennebec River	FERC
462B	Weston-South Channel	-	FPLE Energy Maine Hydro	Skowhegan	Kennebec River	FERC
456	Wyman Station	-	FPLE Energy Maine Hydro LLC	Moscow	Kennebec River	FERC
Significant Hazard Dams in Somerset County						
MEMA ID	Dam Name	Other Name	Dam Owner	Town	River	Regulated By
223	East Madison	-	Madison	Madison	East Branch	MEMA
33	Great Moose Lake	Morgan Dam	Hartland	Hartland	Sebasticook River	MEMA
468A	Moosehead East Outlet	-	FPLE Maine Hydro	Solon	Kennebec River	FERC
468B	Moosehead West Outlet	-	FPLE Maine Hydro	Not Applicable	Kennebec River	FERC
470	Moxie	-	The Forks Plantation	The Forks Plantation	Moxie Stream	MEMA
691	Mulligan Bog		IFW/State of Maine	St. Albans	Mulligan Stream	MEMA
504	West Outlet	Moosehead Lake West	FPLE Maine Hydro	Taunton & Raynham Academy Grant	Kennebec River	FERC

Source: MEMA

A dam breach of one of the high hazard dams shown in the table could cause loss of life in the following communities:

- Brassua: a portion of the Unorganized Territory along the Moose River and along the shores of Moosehead Lake;
- Flagstaff: a portion of the Unorganized Territory south of The Forks Plantation and the Town of Moscow;
- Weston-North Channel: Skowhegan and Fairfield
- Weston-South Channel: Skowhegan and Fairfield
- Wyman Station: Moscow, Bingham, Embden, Solon, Anson and Madison
- Waverly: Pittsfield, Burnham (Waldo County) and communities in Kennebec County between Burnham Junction and Winslow

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A dam breach of one of the significant hazard dams shown in the table could cause property damage in the following communities:

- East Madison: Madison
- Great Moose Lake: Hartland, Palmyra
- Moosehead East Outlet: a portion of the Unorganized Territory
- Moosehead West Outlet: a portion of the Unorganized Territory
- Moxie: The Forks Plantation
- Mulligan Bog: St. Albans
- West Outlet: a portion of the Unorganized Territory

Extent (severity) of Flood Hazard other than Dam Failure. Because of Somerset County's geographic features, many rivers flow steeply from the mountains toward the sea. Rivers in mountainous regions tend to rise very quickly after heavy rainfall because of the gradient of the beds and the drainage areas. Generous precipitation (about 44 inches per year) contributes to the flood potential. Low pressure systems over the ocean and the tendency of some storms to follow one another in rapid succession provide heavy, combined moisture. According to the inter-agency Flood Management/River Basin Report, 2007, (former State Planning Office) the Carrabassett and Sandy Rivers are major contributors to flooding in the Kennebec River. Both tributaries are considered hydrologically flashy and contribute about 40% to the peak discharge of the Kennebec River during flood events.

Records of past flood events indicate that the April 1, 1987 flood along the Kennebec River was one of the most significant in Maine history. Flood damage along the Kennebec River and in the Kennebec Basin was the greatest for any flood (including that of March, 1936) for which data are available. According to the Flood Management/River Basin Report cited above, Somerset County communities along the Kennebec River that experienced significant flood losses included Anson, Madison, Norridgewock, Skowhegan and Fairfield. Communities along the Sebasticook River that experienced significant flood losses included Hartland and Pittsfield.

The following is a summary of peak flow data for several water bodies, based on data obtained from the National Weather Service in Caribou, Maine:

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Kennebec River at The Forks (from USGS website)

(No flood stage information)

Date	Gage Height (feet)	Flow (cfs)
12/15/1902	-	22,400
8/18/1917	10.10	23,700
12/22/1973	12.68	27,600
9/25/81	11.06	21,600
4/18/83	14.41	32,900
6/1/84	13.78	30,300
4/1/87	9.870	20,400

Carrabasset River near North Anson (from USGS and NOAA websites)

Major Flood: 25 feet (gage height)
 Moderate Flood: 20 feet (gage height)
 Flood: 15 feet (gage height)

Date	Gage Height (feet)	Flow (cfs)
9/17/32	18.91	25,600
3/19/36	21.17	30,800
3/27/53	20.76	30,400
2/21/78	27.78	?
4/1/87	26.66	50,700
4/11/93	21.78	?

Sandy River near Mercer

Major Flood: 17 feet (gage height)
 Moderate Flood: 15 feet (gage height)
 Flood: 12 feet (gage height)

Date	Gage Height (feet)	Flow (cfs)
3/19/36	16.75	38,600
3/28/53	16.34	36,900
12/28/69	14.65	29,100
2/12/70	18.89	?
3/15/77	17.27	?
4/1/87	19.25	51,100

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Previous Occurrences

The table below contains a summary of major historical floods in Somerset County, as reflected primarily in Presidential Disaster Declarations.

Historical Summary of Flooding Events in Somerset County since 1970			
Year	Month	General Description	Presidential Disaster Declaration #
1970	Jan-Feb	Severe storms, ice jams, flooding	FEMA 284
1987	April 1	Major damage to homes, businesses, public buildings, sanitation facilities, erosion	FEMA 788
1992	March 27	Heavy rains, ice jams, road & culvert damage	FEMA 940
1993	April	Heavy rains, snow melt, road & culvert damage	FEMA 988
1996	Jan	Heavy rains, snow melt, flooding and ice jams	FEMA 1106
1998	Jun 13 – July 1	Heavy rains damaged public roads and drainage systems	FEMA 1232
2000	Mar 28- Apr 26	Flooding from heavy rains, spring run-off, ice jams	FEMA 1326
2004	Dec 10-31	Severe storms, flooding, snow melt & ice jams	FEMA 1508
2005	Mar 29 – May 3	Severe storms, snow melt, flooding and ice jams	FEMA 1591
2007	Apr 15-23	Severe storms and flooding	FEMA 1693
2008	Apr 28 – May 14	Severe storms and flooding	FEMA 1755
2009	June 18 – July 8	Severe storms, flooding and landslides	FEMA 1852

Source: MEMA (Note: No disaster declarations involving Somerset County since DR-1852 in 2009)

Flood Losses in Dollars by Municipality. Flood losses in Somerset County have been extensive. The following table contains a summary of flood losses by Town for various Federal Disaster Declarations since 1987. The table includes only public assistance losses and does not include individual and business losses which can be substantial.

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Flood Losses in Dollars by Town and Federal Disaster Declaration Since 1987

	1987 #788	1992 #940	1993 #988	1996 #1106	1998 #1232	2000 #1326	2003 #1508	2005 #1591	2007 #1693	2008 #1755	2009 #1852
Somerset County	98,349	24,899	31,485	13,834	7,633	17,772	8,175	93,128	11,567	6,936	0
Anson	74,506	17,726	13,268	0	0	24,623	6,835	9,308	23,711	0	0
Athens	25,554	17,932	0	10,490	0	32,726	9,469	10,301	0	0	0
Bingham	45,459	15,993	29,845	6,591	0	30,899	77,772	120,504	0	12,842	208,304
Brighton Plantation	7,689	0	3,781	0	0	4,917	0	0	16,372	0	0
Cambridge	3,098	9,409	7,791	4,636	0	0	8,102	2,690	1,964	0	0
Canaan	20,406	24,410	2,587	12,875	11,739	13,795	15,368	0	6,014	12,992	0
Caratunk	165,138	21,228	14,610	7,206	35,513	1,644	0	0	0	0	0
Cornville	10,723	13,389	1,294	20,432	40,237	16,182	15,046	19,596	14,277	68,661	0
Detroit	0	0	0	0	0	0	0	0	2,278	1,043	0
Emden	49,729	18,373	40,946	1,781	0	10,924	0	0	0	0	0
Fairfield	48,311	20,927	0	0	0	0	5,667	0	7,119	4,280	0
Harmony	34,013	14,070	0	9,271	0	19,571	12,869	0	22,656	15,856	0
Hartland	1,949,355	2,369	10,103	8,314	5,937	8,982	0	0	25,545	15,383	0
Highland Pit	0	0	4,384	0	0	0	0	0	0	0	0
Ironbound Pond	0	0	5,246	0	0	0	0	0	0	0	0
Jackman	3,868	0	0	2,781	7,967	2,946	0	0	0	0	0
Madison	11,248	47,545	0	0	0	47,086	25,758	0	11,350	0	0
Mercer	32,434	50,522	348,914	25,412	23,867	62,176	21,055	55,042	15,750	0	0
Moscow	59,631	13,686	155,613	0	26,366	6,072	5,763	2,340	0	0	0
New Portland	71,318	24,647	24,518	4,224	3,886	52,807	0	53,196	20,486	0	0
Norridgewock	22,753	32,763	0	12,498	0	12,469	0	33,504	11,993	0	46,993
Palmyra	6,120	4,903	0	6,790	4,977	4,061	12,496	8,106	26,486	45,972	0
Pittsfield	41,662	0	0	0	12,771	0	13,701	0	2,547	9,760	0
Pleasant Ridge Pit	23,049	0	0	0	0	0	0	14,575	0	0	0
Ripley	6,881	4,993	0	0	0	9,780	0	0	0	0	0
St. Albans	9,752	12,099	0	0	0	0	0	0	0	40,113	0
Skowhegan	1,409,517	20,173	909	14,873	0	0	7,875	56,987	5,728	10,488	0
Smithfield	4,036	8,894	0	0	6,743	11,621	8,338	0	40,228	0	0
Solon	13,587	8,092	11,101	0	13,275	62,149	140,617	94,297	62,958	23,359	0
Starks	154,564	33,559	11,241	0	0	18,917	12,509	0	0	0	0
The Forks	0	0	3,002	0	0	0	0	0	0	0	0
West Forks Pit	3,884	0	0	0	0	0	0	0	0	4,480	0
Total	4,406,634	462,601	720,638	162,208	200,911	472,119	407,415	573,574	329,029	272,165	255,297

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Probability of Occurrence

Based on the history of occurrences in Somerset County, it can be expected that a major flood event will cause mostly road damage in Somerset County every one to five years.

Floods are described in local flood hazard 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 standards for floods in the United States 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." The probability of flooding of homes, commercial and governmental buildings and critical facilities located in flood-prone areas is 1% in any given year.

The flood of April, 1987 was one of the most significant flooding events in Maine's history. According to a U.S. Geological Survey paper #2424 ("The Flood of April, 1987 in Maine"), flood damage in the Penobscot and Kennebec River basins in 1987 was the greatest for any flood (including March of 1936) for which data are available. This flood caused over \$100,000,000 in damages statewide. Public disaster assistance grants in Somerset County amounted to over \$4.4 million.

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Severe Winter Storms

All of Somerset County is subject to severe winter storm events. The southern parts of the County which contain the vast majority of the population, are very susceptible to ice storms. The entire County is very susceptible to blizzards. One of the worst storms in recent years was the ice storm of 1998, which caused about \$900,000 in damages throughout the entire County. This event severely damaged the electrical transmission system, and caused major damage to the forest, blocked many roadways with debris and ice, and caused some limited building damages.

Severe winter storms do not ordinarily have an immediate impact on flooding. However, they add to the snow pack, which in the January thaw or springtime can lead to rapid snowmelt, runoff and flooding. Ice jams can exacerbate flooding by temporarily blocking, then releasing, large volumes of water, often with disastrous downstream impacts.

Types of Severe Winter Storms in Somerset County. Severe winter weather conditions are distinguished by freezing or sub-freezing temperatures, strong winds, and often large quantities of snow. A single winter storm may include one or more of the following:

- **Blizzard:** Sustained winds of 40 mph (miles per hour) or more or gusting up to at least 50 mph with heavy falling or blowing snow, persisting for one hour or more, temperatures of ten degrees Fahrenheit or colder and potentially life-threatening travel conditions.
- **Ice storms:** Rain which freezes upon contact. Ice coatings of at least one-fourth inch in thickness are heavy enough to damage trees, overhead wires, and similar objects and to produce widespread power outages.
- **Nor'easter:** Nor'easters (or nor'easters) are extra-tropical coastal storms that can produce tremendous amount of precipitation and strong winds. When the precipitation is in the form of snow, sleet or freezing rain, it can damage overhead utility lines and become a highway driving hazard.
- **Sleet/hail storm:** Frozen rain drops (ice pellets) which bounce when hitting the ground or other objects. In accumulated depths of two inches or more, it produces hazardous driving conditions. In rare circumstances, the pellets are larger hail formations that can dent vehicles.
- **Heavy snow storm:** A snowfall of fifteen inches or more within 12 to 24 hours, with sustained winds of less than 40 miles per hour, which disrupts or slows transportation systems and the response time of public safety departments.

Location of Severe Winter Storm Hazard

The entire County is subject to severe storms every winter, but historically, the northern and north-western areas receive more snowfall.

Extent (Severity) of Hazard

Somerset County is subject to severe winter storm events in the form of ice storms and blizzards, accompanied by high winds and flooding. Winter storms can threaten Somerset County any time from November through April. The Gulf Stream follows a path up the eastern seaboard, bringing major storms with it to the Gulf of Maine. Air streams containing much colder air flow down from Canada and collide with the Gulf Stream over the New England region. Nor'easters, the most severe storm in Somerset County, occur during the winter, spring and fall. They rarely develop during the summer.

Precipitation amounts can exceed several inches of water equivalent (20-30 inches of snow or more), while wind speeds can be equal to or greater than those for hurricanes (74 mph) that reach Maine. Loss of electrical power and communication services can occur when utility lines yield under the weight of snow and ice accretion.

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Total snowfall in the Southern Interior (roughly the southern one third of the County) ranges from between 60 to 90 inches, while that in the Northern Division (roughly the northern two thirds of the County) ranges between 90 to 110-plus inches. The largest average seasonal snowfall totals from lengthy records are 188 inches per winter season in Jackman. Higher snowfall totals may be found locally, particularly at higher elevations in the northwest mountains. January is usually the snowiest month throughout the State, with December usually averaging out to be the second snowiest month.

On average, the length of annual maximum snow cover is four months or more throughout the County.

Previous Occurrences

The following is a summary of some of the most severe winter storms in Somerset County during the past 30 years, primarily as reflected in either Presidential Disaster Declarations or Presidential Emergency Declarations.

Key:

DR: Disaster Declaration
EM: Emergency Declaration

Historical Summary of Major Winter Storm Events in Somerset County Since 1978			
Year	Month	General Description	Presidential Declaration #
1978	Jan 10	Rain/snow/ice	n.a.
1993	Mar 13, 14	Blizzard	FEMA 3099-EM
1998	Jan 5-25	"Great Ice Storm of '98"	FEMA 1198-DR
2001	Mar 5-31	Severe winter storm	FEMA 3164-EM
2003	Dec 6-7	Snow, winter storms and extreme cold	FEMA 3190-EM
2003	Dec 14-15	Snow, winter storms and extreme cold	FEMA 3194-EM
2005	Feb 10-11	Snow, winter storms and extreme cold	FEMA 3206-DR
2005	Mar 9	Snow, winter storms and extreme cold	FEMA 3209-DR

Source: MEMA. Note: Somerset County has not been in a declaration since DR-3209 in 2005.

The following table contains a summary of winter storm losses by town for various Federal Disaster or Emergency Declarations since 1993. The table includes only public assistance losses and does not include individual and business losses. By far, the largest losses were from the ice storm of 1998 (#1198-DR).

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Severe Winter Storm Losses in Dollars by Town and Federal Disaster or Emergency Declaration Since 1993					
	1993 #3099-EM	1998 #1198-DR	2001 #3164-EM	2004 #3190-EM	2004 #3194-EM
Somerset County	0	18,713	0	0	0
Anson	3,696	75,599	19,086	10,034	11,589
Athens	2,550	23,547	4,222	4,196	5,827
Bingham	0	17,048	0	4,071	1,916
Brighton Plantation	0	3,943	0	0	0
Cambridge	0	18,091	0	0	0
Canaan	1,855	41,921	7,401	7,961	9,373
Caratunk	0	0	0	0	0
Cornville	1,685	13,912	13,973	4,707	3,554
Detroit	0	14,901	0	0	0
Emden	0	6,612	0	0	0
Fairfield	3,961	138,606	24,433	15,033	15,243
Harmony	1,315	20,160	0	0	0
Hartland	0	25,250	3,108	0	0
Highland Plt	0	0	0	0	0
Jackman	0	16,877	2,050	0	0
Madison	4,609	74,411	15,379	10,931	13,103
Mercer	0	37,352	7,517	4,052	3,866
Moscow	0	8,430	0	0	0
New Portland	0	7,894	0	0	0
Norridgewock	2,631	53,203	12,547	13,065	14,798
Palmyra	1,418	41,683	7,198	3,311	4,709
Pittsfield	0	49,566	6,023	3,224	8,362
Pleasant Ridge Plt	0	0	0	0	0
Ripley	0	10,855	0	0	0
St. Albans	2,295	41,613	8,887	4,306	6,388
Skowhegan	3,752	65,614	34,770	22,809	21,925
Smithfield	0	20,795	4,832	3,530	1,765
Solon	1,960	31,117	9,251	4355	6,064
Starks	2,490	21,949	5,263	5,892	7004
The Forks	0	0	0	0	0
West Forks Plt	0	0	0	0	0
Total	34,217	899,662	185,940	121,477	135,486

Source: MEMA. Note: Somerset County has not been in a declaration since DR-3194 in 2005.

Probability of Occurrence

No probability studies have been done, but Somerset County's location in the Northeast, and its long experience with winter storms, indicate that between November and April of every year, there is a probability that a severe winter storm will occur. The locations where such storms are the most intense will vary from year to year. Climate models suggest that Maine is likely to get more ice storms in the future because of warmer temperatures, but it is not known whether the severity of ice storms will be affected by warmer temperatures. If colder temperatures prevail, the precipitation will be in the form of snow, as was the case in the record-breaking "snow year" of 2014-2015 that blanketed the northeast.

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Severe Summer Storms

Severe summer storms and hurricanes can have an immediate impact on flooding, primarily as a result of heavy downpours. Damages typically involve downed overhead utility lines, flooding from heavy rains, debris in the roads, and often erosion.

General Definition: A violent weather phenomenon producing winds, heavy rains, lightning, and hail that can cause injuries and destruction of property, crops and livestock.

Types of Summer Weather Events: There are several different types of summer weather events in Somerset County:

- **Hurricane:** An intense, tropical cyclone, formed in the atmosphere over warm ocean areas, in which wind speeds reach 74 miles per hour or more and blow in a large spiral around a relatively calm center called the "eye."
- **Tropical Storm:** An intense, tropical cyclone with wind speeds of less than 74 miles an hour. Somerset County occasionally experiences tropical storms, sometimes as the result of hurricanes that lose strength by the time they get to the County.
- **Lightning:** An electrical discharge that results from the buildup of positive and negative charges within a thunderstorm. When the buildup becomes strong enough, lightning appears as a "bolt." This flash of light usually occurs within the clouds or between the clouds and the ground. A bolt of lightning reaches a temperature approaching 50,000 degrees Fahrenheit in a split second. The rapid heating and cooling causes thunder.
- **Thunderstorm:** A storm formed from a combination of moisture, rapidly rising warm air and a force capable of lifting air such as a warm or cold front. All thunderstorms have lightning and can occur singly, in clusters or in lines.
- **Tornado:** A violently rotating column of air extending downward from a thunderstorm to the ground. The distinctive, slender, funnel shaped cloud, with wind velocities up to 300 miles per hour at the central core, destroys everything along its narrow ground path.
- **Microburst:** A small, extremely intense downdraft which descends to the ground creating strong wind divergence. Microbursts are typically limited to areas less than 2.5 miles across. This weather phenomenon is capable of producing damaging surface winds in excess of 100 mph. Generally, a microburst event will last no longer than 15 minutes.

Location of Severe Summer Storms

All of Somerset County is subject to severe summer storms. The effects of severe summer storms are usually more common in the less populated areas of the western, mountainous region, than in southern parts of the County.

Extent (severity) of the Hazard

The most potentially damaging types of summer storms in Somerset County would be F1 or greater tornados, microbursts with winds in excess of 100 miles per hour, thunderstorms of more than an inch of rain per hour that can wash out roads and result in flash flooding, or an actual hurricane strike that could cause deaths as well as structural damages. The table below provides information on various categories of tornados.

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The Fujita Tornado Scale (abbreviated)

Maximum Wind Speeds	Tornado Category	Equivalent Saffir-Simpson Scale (for hurricanes)	Typical Effects
40-72 mph	F0	NA	Gale tornado; light damage to chimneys; breaks twigs and branches off trees; pushes over shallow-rooted trees; damages signboards; some windows broken.
73-112 mph	F1	Cat 1/2/3	Moderate tornado. Moderate damage: peels surfaces off roofs; mobile homes pushed off foundations or overturned; outbuildings demolished; moving autos pushed off roads; trees snapped or broken.
113-157 mph	F2	Cat 3/4/5	Significant tornado; considerable damage: roofs torn off frame houses; mobile homes demolished; frame houses with weak foundations lifted and moved; boxcars pushed over; large trees snapped or uprooted; light-object missiles generated.
158-206 mph	F3	Cat 5	Severe tornado; severe damage: roofs and some walls torn off well-constructed houses; trains overturned; most trees in forests uprooted; heavy cars lifted off the ground and thrown; weak pavement blown off roads.
207-260 mph	F4	NA	Devastating tornado; devastating damage: well-constructed homes leveled; structures with weak foundations blown off some distance; cars thrown and disintegrated; large missiles generated; trees in forest uprooted and carried some distance away.

Damages from hurricanes have been minimal. The table below provides information on various categories of hurricanes.

Saffir-Simpson Hurricane Scale		
Category	Wind Speed	
	mph	Knots
5	>156	≥135
4	131-155	114-134
3	111-130	96-113
2	96-110	84-95
1	74-95	65-83
Non-Hurricane Classifications		
Tropical Storm	39-73	34-64
Tropical Depression	0-38	0-33

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Previous Occurrences

The most severe forms of summer storms, hurricanes and tornadoes, occur very infrequently in Somerset County. There have been three hurricanes that affected Somerset County, as shown in the table below. Historically, of all Maine's natural hazards, hurricanes are the most likely to cause deaths. The impact would vary widely, depending on whether it struck a rural or urban population.

Historical Summary of Hurricanes in Somerset County					
Year	Month/ Day	Name of Hurricane	Statewide Estimated Damages	Type of Damage	Declaration
1954	Sept. 11	Edna	Statewide - \$7 million Unknown	Statewide – 8 deaths, power outages	Presidential - #24
1985	Sept. 17	Gloria	Unknown	3 injuries, downed trees, power failures up to 14 days, 250,000 people affected	N.A.
1999	Sept. 16-19	Floyd	\$175,563	Androscoggin, Cumberland, Kennebec, Oxford, Somerset - \$1,210,205	Presidential FEMA-1308-DR ME

Unlike the other hazards, summer storms do not have a table of occurrence other than the most severe form, hurricanes, as shown in the table above. However, based on information obtained from the NOAA website, the only recorded F2 tornadoes reported in Somerset County were in 1961, 1962, 1971 and 2000. F2 tornadoes include winds of 113 to 157 miles per hour, and are considered significant tornadoes. F2 tornadoes can tear roofs off frame houses, lift and move frame houses with weak foundations, demolish mobile homes and snap or uproot trees.

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The following table provides a town-by-town summary of damages resulting from Hurricane Floyd in 1999.

Hurricane Floyd, 1999 Summary of Damages	
Jurisdiction	Damages
Somerset County	\$4,032
Bingham	4,936
Brighton Plantation	1,294
Caratunk	106,474
Fairfield	7,319
Jackman	4,378
Mercer	16,089
Solon	9,519
Starks	1,034
The Forks Plantation	16,818
West Forks Plantation	3,672
Total	\$175,563

Probability of Occurrence

There have been no probability studies to indicate the frequency of summer storms. However, Somerset County's location in the northeast, and its long experience with summer storms, indicate that each summer, there is a high probability that summer storms will occur.

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Wildfires

All parts of the County could be subject to wildfires. However, the most northern portion of the County has the least accessibility to the productive forestland due to the lack of roads and development and the central and southern portion of the County has a larger number of homes and businesses within the wildland urban interface. In fact, the majority of the population is located within seven communities in the south central part of the County that contains most of the wildland urban interface with a large number of homes and businesses.

General Definition: A wildfire is a fire that burns vegetative cover such as grass, timber, or slash. A wildfire is a natural phenomenon initially finding its origin in lightning. However, humans have become the greatest cause of wildfires in Maine.

Types of Wildfires: There are two types of wildfires:

- Wildland fires burn vegetative cover or forest fuel.
- Wildland Urban Interface Fires are created where homes meet with highly volatile forest fuels.

Location of Wildfire Hazard

The vast majority of the County is wooded with the greatest expanse of woodland and wood cover contained in the northern and western parts of the County, spanned by a vast paper company and private road network that allows open accessibility to outdoor recreation and therefore exposure to either natural fire occurrences or those with a human element involved, either planned or unplanned. This tourist population values the pristine wooded area of the County, and wants to be immersed in it, but often does not fully appreciate that fire protection exists only in volunteer departments and in State forestry agencies with long response distances over a limited road system.

Extent (Severity) of the Hazard

Somerset County could be subject to wildfires if it were to experience several years of severe drought. The majority of the County is forest land and the accessibility by vehicle to some areas is limited. The likelihood of a severe wildfire is low, but the impact would be high because of potential damages to homes located in wooded areas. A wildfire in October 1825 burned 3,000,000 acres in Maine and New Brunswick. The most severe wildfire in the State's recent history occurred in October of 1947. This fire burned 205,678 acres and caused 16 deaths. However, most of the damages were confined to Cumberland, Hancock, Oxford and York Counties.

Previous Occurrences

Based on information obtained from the Maine Forest Service, there have been no major fires in Somerset County in recent years. All of the wildfires known to have occurred were confined to relatively small land areas. Historically, forest fires were one of the State's most significant hazards, and Maine averages about 600-700 low acreage forest fires annually. Today, about 90% of all forest fires are caused by human activity while lightning causes about 10%. During dry periods, the fire danger increases rapidly.

Probability of Occurrence

While probability studies have not been done, based on historical records of fires, the Maine Department of Conservation, Maine Forest Service, Forest Protection Division, anticipates that on a statewide basis, there will be between 600-700 low acreage fires (from all causes) each year (a low acreage fire is less than 500 acres).

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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. All plans approved after October 1, 2008 must also address NFIP insured structures that have been repetitively damaged by floods. The plan should describe vulnerability in terms of:

(A) The types and numbers of existing and future buildings, infrastructure, and critical facilities located in the identified hazard areas;

(B) An estimate of the potential dollar losses to vulnerable structures identified in paragraph (c)(2)(ii)(A) of this section and a description of the methodology used to prepare the estimate;

Providing a general description of land uses and development trends within the community so that mitigation options can be considered in future land use decisions

Elements	B3. Is there a description of each identified hazard's impact on the community as well as an overall summary of the community's vulnerability for each jurisdiction?
	B4. Does the Plan address NFIP insured structures within each jurisdiction that have been repetitively damaged by floods?
	D1. Was the plan revised to reflect changes in development?

Vulnerability of Somerset County to each hazard

Flooding. Some of the County's most serious flooding has been in areas where there are residential and/or commercial structures such as the Southside Bridge area of Skowhegan along the Kennebec River and a residential area in Pittsfield along the Sebasticook River. Other towns subject to severe flooding include Anson, Madison, Norridgewock and Fairfield. However, most of the developed areas in Somerset County are located outside of designated flood plains, and are thus not very vulnerable to flooding. On the other hand, many parts of the County are very rural in nature, and are served 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, even though these roads may not be in an identified flood plain. See also discussion of dam breach impacts.

Severe Winter Storms. Somerset County's location in Northern New England places it in a high-risk area for winter storms. While the majority of winter storms in Somerset County occur during the winter season of December through March, there are occasional winter storms in the late fall (November and early December) and in the spring (March – April). However, the severity of storms is typically most serious in January and February, with storms in the earlier and later parts of the seasons usually being of lesser magnitudes.

The time of day at which storms occur is also important, as overnight storms allow for the closure of schools and businesses, whereas storms during the day force people to travel home during storm conditions. Based on past experience, storms are most likely to occur overnight or during the morning, but afternoon storms are still somewhat likely.

A major ice storm of the severity that occurred in 1998 would impact nearly all of Somerset County and threaten the overhead electric and communication lines. Roads may be closed due to washouts and debris in roads from trees and utility lines.

As noted earlier in this Assessment, Somerset County has been included in a number of Presidential Disaster Declarations for winter storms. Somerset County contains at-risk populations that could be impacted by a major winter storm.

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Severe Summer Storms. The entire County is vulnerable to thunderstorms, microbursts, and high winds associated with changing weather systems or fronts. During the summer months, southwest to southerly winds are prevalent in the County. Severe high winds can drop trees and branches onto power lines, causing power and communication outages. Heavy rains can result in flash flooding or erosion. As previously noted, there have been more occurrences of severe summer storms in recent years.

Wildfires. Somerset County is heavily forested, and is vulnerable to forest fires. However, all of the organized municipalities in Somerset County are served by capable fire departments. The Maine Forest Service has been very active in forest fire prevention activities, and, through meetings convened by the Somerset County Emergency Management Agency, meets periodically with municipal fire chiefs on matters related to wildfire prevention and response activities. However, the departments are largely made up of volunteer firefighters and a shortage of volunteers would make the county more vulnerable to wildfires.

Impacts of each hazard on Somerset County

Flooding. Severe flooding 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, and loss and interruption of business. Ironically, fire-fighting efforts can be compromised if fire fighters and equipment are responding to a flood emergency.

In addition to damages to residential and commercial structures in some locations, the typical damages resulting from flooding in Somerset County include damages to roads and their respective drainage systems. Historically, flood damages have included partial or complete road washouts, as well as severe erosion of roadside ditches, resulting in hazards to motorists if their vehicles go off the road. In some cases, entire communities have been partly or completely isolated because the only road serving the town has been damaged by floods.

Severe Winter storms. The impacts of severe winter storms include road closures (and the subsequent inability of emergency vehicles to provide help), the loss of power for extended periods of time, high costs to local governments for snow removal efforts, and loss of income to businesses and individuals due to business closures. Roof collapses, both residential and commercial, are rare but they can occur when snow loads become extreme.

These conditions can impede the response of ambulance, fire, police and other emergency services, especially to remote or isolated residents. Roads can become impassable as the result of snow accumulation and drifting. Business closings can occur due to road conditions and loss of power. Structural failures are possible as the result of snow loads on roofs. This is of particular concern with respect to older structures built prior to the advent of snow-load design standards. Heavy snow loads can also result in the formulation of ice dams on roofs, leakage and damage to building interiors.

The snow pack makes an important contribution to both surface and groundwater supplies, and years with a low snow pack can lead to water shortages by late summer. Melting of the snow pack in March and April is often gradual enough to prevent serious flooding, but in Somerset County, melting snow, combined with rainstorms, often overwhelms watersheds, ditches and culverts, which can lead to road washouts.

The ice storm of January, 1998, is still the storm of record. It had a major impact on Somerset County, in part because the entire electrical grid feeding power from Central Maine Power was damaged. Ice accumulated on the utility lines, causing them to break. The costs of the ice storm were substantial. Utility crews from Maine and throughout the East Coast worked around the clock to clear downed

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trees and replace power lines. In some locations, more than three inches of ice coated the rural and urban landscape.

Many state and secondary roads were closed because of downed trees on power lines. Heat, electricity, refrigeration, running water and sanitary facilities were all interrupted by the power outage. Television and radio stations remained unavailable to most citizens for more than a week. Even the Emergency Alert System failed.

Severe Summer Storms. The damages from severe summer storms typically involve the washout of roads, downed utility lines and debris clearance. If severe enough, this can result in the loss of income to businesses and individuals due to business closures.

During summer months, southwest to southerly winds become quite prevalent across the County. When severe summer storms arrive in Somerset 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. Lightning strikes can start fires. Any of these weather events can cause personal injury or property damage.

The impact of severe summer storms in Somerset County is usually restricted to flooding and erosion caused by the large amounts of moisture these storms can carry.

Wildfires. The primary impacts include damages to homes located in the wildland-urban interface and loss of valuable timberland. A larger percentage of homes in rural towns are located in the wildland-urban interface than homes in village areas. The northern part of the County includes vast tracts of forestland that could be damaged by wildfires.

Repetitive Losses (flood Insurance)

Based on information obtained from the Floodplain Management Program in the Maine Department of Agriculture, Conservation and Forestry, there have been 9 repetitive losses in Somerset County, as shown in the table below. In accordance with the Federal Privacy Act, the addresses, owner names or claim information of these repetitive loss properties are not disclosed.

Definition of Repetitive Loss Structure: An NFIP structure that has had at least two paid flood losses of more than \$1,000 each in any 10-year period since 1978.

Somerset County Repetitive Loss Properties				
Town/City	Residential Structures		Non-Residential Structures	
	# Properties	# Losses	# Properties	# Losses
Anson	1	3	-	-
Fairfield	1	2	-	-
Hartland	1	2	-	-
Norridgewock	1	2	-	-

Source: NFIP Program 09/11/2015

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Identifying Structures

This section of the Plan identifies existing buildings, infrastructure and critical facilities within the County and the hazards to which these facilities are susceptible. A critical facility is defined as a facility in either the public or private sector that provides essential products and services to the general public, is otherwise necessary to preserve the welfare and quality of life in the County, or fulfills important public safety, emergency response, and/or disaster recovery functions.

Critical Facilities. The critical facilities identified in Somerset County are:

- Municipal offices
- Fire and police stations
- Public works facilities
- Water and wastewater treatment facilities
- Libraries
- Schools
- Shelters
- Hospitals and clinics
- Nursing homes
- Airports
- Power plants
- Dams
- Hazardous materials facilities
- Bridges
- Rail systems

The Somerset County Emergency Management Agency used existing Maine GIS map data and a hand-held GPS data collector to map and locate the County's critical facilities and determine which are most likely to be affected by hazards. The four hazards most likely to impact the County are flooding, winter storms, summer storms and wildfires.

A. Vulnerability of Existing Buildings, Infrastructure and Critical Facilities

Flooding. A 100-year flood would have an impact on many road surfaces and bridges. No critical facilities were identified as being in danger from flooding.

- **Buildings.** Some of the County's most serious flooding has been in areas where there are residential and/or commercial structures including locations in Skowhegan and Pittsfield.
- **Infrastructure.** Roads and their associated storm drainage systems are the most vulnerable category of infrastructure. Many parts of the County are rural in nature, and are served 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.** No critical facilities were identified as being in danger from flooding.

Severe Winter Storms

- **Buildings.** All buildings in Somerset County could be vulnerable to winter storms. 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 snow loads.
- **Infrastructure.** A "Northeaster," blizzard or ice storm of the severity that occurs once every 3-5 years, and/or a winter storm with severe winds, could have a negative impact on all roads in the County and on all overhead electrical power and telephone lines. Roads may be covered in snow, washed out or blocked with tree debris. Utility lines and poles may be felled.
- **Critical facilities.** No critical structures were identified as being in danger from a severe winter storm.

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Severe Summer Storms.

- **Buildings.** All buildings in Somerset County could be vulnerable to severe summer storms. Damages can result from debris like tree limbs, and from high winds and interior water damages due to wind-driven rain.
- **Infrastructure.** A summer storm could cause erosion to local roads as well as flooding of some roads. They can also become temporarily blocked due to heavy rain and debris over a short period.
- **Critical facilities.** No critical structures were identified as being in danger from a severe summer storm.

Wildfires

- **Buildings.** Wildfires could have a large impact on homes located in the wildland-urban interface.
- **Infrastructure.** Power, phone and cable lines can be damaged during a wildfire. Roads and their storm drainage systems are much less vulnerable, although road access to certain areas can be blocked by fires and by emergency fire-fighting vehicles.
- **Critical facilities.** Wildfires in Somerset County have tended to be relatively small, and have not been a threat to critical facilities. In the event of a very large wildfire, some critical facilities could be damaged by fire and smoke.

County Asset Inventory. The chart on pages 4-30 and 4-31 identifies the type and number of critical facilities in each town in Somerset County. In addition to critical facilities, Somerset County contains at-risk populations that should be factored into the vulnerability assessment. These include a relatively large population of elderly residents who live alone in very rural areas and who have limited mobility. There are a number of Red Cross-approved shelters in the County that can serve at-risk populations, some of which have generators (including two in Madison, one in Pittsfield and one in Jackman).

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County Asset Inventory by Municipality

Towns	Municipal Office	Fire Station	Police Station	Public Works	Water Treatment	Wastewater Treat.	Library	Schools	Red Cross Shelters	Hospital/Clinic	Nursing Home	Airport	Power Plants	Dams	Hazmat Facilities	Bridges	Rail System
Anson	1	2		1				3	1				1	1		1	1
Athens	1	1		1				1	1	1							
Bingham	1	1		1		1		2	1	1	1	1				6	
Cambridge	1																
Canaan	1	1		1				1									
Caratunk									1								
Cornville	1	1		1				2									
Detroit	1	1		1													1
Embden								1					1				
Fairfield	1	1	1	2	1	1	1	3	4		1				1	3	1
Harmony	1	1						1	1								
Hartland	1	1		1		1	1	4		1	2			1		8	
Jackman	1	1		1	1	1	1	1	1	1	2	2			4	1	1
Madison	1	2	1	1	1	1	1	5	2	1	1		1	1	5	1	1
Mercer	1						1	1						1		3	
Moose River																	
Moscow	1			2				1					1	1		11	
New Portland	1	1						1									
Norridgewock	1	1		1	1	1	1	2		1		1		2	4	3	1
Palmyra	1			1			1	1						1		3	
Pittsfield	1	1	1	1	1	1	1	5	1	2	2	1	1	2		4	1
Ripley	1																
Saint Albans	1				1			1								7	
Skowhegan	1	1	1	1	1	1	1	7	3	1	3		1	3	18	5	1
Smithfield	1	1						1									

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Towns	Municipal Office	Fire Station	Police Station	Public Works	Water Treatment	Wastewater Treat.	Library	Schools	Red Cross Shelters	Hospital/Clinic	Nursing Home	Airport	Power Plants	Dams	Hazmat Facilities	Bridges	Rail System
	1	1		2			1	1						1	1	3	
Solon																	
Starks	1							1	1								
Plantations																	
Brighton																	
Denniston																	
Highland																	
Pleasant Ridge																	
The Forks																	
West Forks	1	1															
Unorganized	1	1		1				2				1		17		22	
TOTAL	26	21	4	21	6	8	10	48	17	9	12	6	6	34	33	81	8

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B. Vulnerability of Future Buildings, Infrastructure and Critical Facilities

There has been very little growth in Somerset County in the last 20 years, and very little growth is expected during the foreseeable future. Between 1990 and 2000, Somerset County's population increased from 49,767 to 50,888, a growth of 1,121 or 2.25%. Between 2000 and 2010, the County's population increased from 50,888 to 52,228, a gain of 1,340 people or 2.6%. Maine's Office of Policy and Management estimates that the county's population will decline to 51,401 by 2017, and to 50,695 by 2022. Given these projected declines, there will be very few if any significant future buildings, infrastructure or critical facilities that will be vulnerable to the identified hazards.

Assessing where future development will occur in the towns in Somerset County is difficult due to a lack of municipal plans and zoning ordinances. Most municipalities in Somerset County are very small and rural and do not have planning departments, building codes or even a full time code enforcement officer. Many towns lack a town office. There is very little in the way of commercial, industrial or public construction in many of these communities. In most communities, the rules guiding residential development are limited to the State's subdivision law, shoreland zoning ordinances that apply to land areas within 250 feet of the region's lakes, major rivers and significant wetlands, floodplain management ordinances and the State's subsurface wastewater disposal rules.

Flooding

- **Buildings.** The majority of damages from flooding is to roads, not structures. All municipalities except Athens and Moose River have floodplain ordinances that provide control over development in flood prone areas.
- **Infrastructure.** Future roads and their associated storm drainage systems would seem to be the most likely category of infrastructure that would be vulnerable to flooding. However, State and local road construction standards generally ensure that new roads are properly constructed with adequate storm drainage systems. Most if not all roads in the public domain must be designed by a registered professional engineer. Therefore, flooding of future roads is not likely to be a serious issue in Somerset County.
- **Critical facilities.** Because of the requirements of the Flood Insurance Program, as well as shoreland zoning requirements and a greater awareness of flooding in all communities, future critical facilities will continue to be located outside floodplain areas. The exception may be wastewater treatment plants, due to the need to locate these facilities at lower elevations.

Severe Winter Storms

- **Buildings.** New buildings in Somerset County should be less vulnerable to winter storms. Damages may include burst water pipes, but many newer buildings will be better insulated than older ones, thus being better able to retain heat during longer periods of time when there is a power outage. There will be less interior water damage due to ice dams forming on roofs because the roofs of newer buildings generally are properly vented, which allows the roofs to remain cold. Roof collapses due to heavy snow loads will be very rare because newer roofs are designed to withstand heavy snow loads.
- **Infrastructure.** Roads will continue to be the most vulnerable category of infrastructure. New roads can be just as easily blocked on a temporary basis due to heavy snowfall, ice building up on the road surface, and debris such as tree limbs accumulating on the road surface during a storm event. However, in the present economy, it is unlikely that Somerset County will experience much new road construction, with the possible exception of small road segments serving subdivisions.

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

Severe Summer Storms

- **Buildings.** New buildings in Somerset County will be less vulnerable to severe summer storms because they are built to meet modern code requirements. Damages may include roof damage from falling trees and debris. There will be less Interior water damage due to wind-driven heavy rains because the roofs of newer buildings generally are properly designed and roofing materials are more resistant to water infiltration. It is unlikely that a Category 1 Hurricane (which is all that has hit Somerset) or high winds will have any impact on future structures. This hazard primarily creates road debris and downed overhead utility lines.
- **Infrastructure.** Roads will continue to be the most vulnerable category of infrastructure. New roads can be blocked on a temporary basis due to heavy rainfall, and debris such as tree limbs accumulating on the road surface during a storm event.
- **Critical facilities.** Future critical facilities in Somerset County will be vulnerable to summer storms in the same manner that individual buildings will be vulnerable. However, some of them will have back-up generator systems which will allow building systems to continue operating during a power outage.

Wildfires

- **Buildings.** Wildfires in Somerset County primarily threaten residential structures in the wildland-urban interface. In most Somerset County communities, homes are allowed to be constructed in most locations in the community. Forest fires seldom burn out of control because most towns have a dedicated group of volunteer fire fighters who know their community and work hard to keep their fire-fighting equipment in good condition and their fire-fighting skills up-to-date.
- **Infrastructure.** Future power, phone and cable lines can be damaged during a wildfire, although the level of future development is expected to be minimal, primarily because of the future population losses projected for the County.
- **Critical facilities.** Future critical facilities may be vulnerable to a very large wildfire. However, the expectation is that there will be very few new critical facilities constructed during the life of this plan.

The Maine Forest Service's (MFS) Forest Protection Division provides forest fire protection services for all of Maine's forest lands. MFS' goals are to keep the number of forest fire starts to less than 1,000 and annual acreage loss to less than 3,500. Since 2002, MFS has met those goals because of:

- Quick and effective initial attack on all fires;
- Effective air detection and aerial suppression;
- Modern forest fire-fighting equipment;
- Strong emphasis on fire prevention, including State control of statewide burning permits;
- Aggressive training and preparation;
- Improved access to remote areas of the State;
- Northeast Forest Fire Compact membership, providing resources during periods of high fire danger;

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- Proactive public information campaigns;
- Law enforcement; and
- Extensive automated weather stations providing accurate daily information used to assist in planning fire operations

In 2001, the MFS developed a Wildland Urban Interface (WUI) Committee. This committee was assigned the responsibility of assessing the risk of wildfire to homes within and near forested areas. MFS has printed and distributed over 4,000 brochures and has developed public service announcements alerting homeowners to the potential threat of wildfire in interface areas and what they can do to limit their exposure to the threat of wildfires. MFS has also partnered with the National Park Service to deliver software that can determine risk in Maine communities.

MFS has also launched a community assessment program aimed at focusing its fire prevention efforts on geographical areas of the State with relatively high occurrences of wildfires. The assessment involves working with local officials and the public to identify vulnerable homes in the urban/wildland interface. MFS then prepares a community wildfire protection plan that contains guidelines that homeowners can use to protect their homes. The emphasis is on maintaining a 30-foot defensible space around homes.

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Estimating Potential Losses

Overview. This section of the Plan relies on historical damages as the basis for estimating future losses, subject to the following:

- Historical damage estimates have been updated, using the Consumer Price Index shown below;
- Presidential Disaster Declarations have been used where possible, updated for inflation using the Consumer Price Index below;
- Where statewide or county damages are used to determine damages for a specific jurisdiction, the damages are pro-rated using the 2010 Census.

The average annual Consumer Price Index for various years is shown below based on a value of 100 for the years 1982-1984.

Consumer Price Index 1982-1984 = 100		
1947 = 22.3	1991 = 136.2	2004 = 188.9
1954 = 26.9	1992 = 140.3	2005 = 195.3
1980 = 82.4	1993 = 144.5	2006 = 201.6
1981 = 90.9	1994 = 148.2	2007 = 207.3
1982 = 96.5	1995 = 152.4	2008 = 215.3
1983 = 99.6	1996 = 156.9	2009 = 214.5
1984 = 103.9	1997 = 160.5	2010 = 218.1
1985 = 107.6	1998 = 163.0	2011 = 224.9
1986 = 109.6	1999 = 166.6	2012 = 229.6
1987 = 113.6	2000 = 172.2	2013 = 233.0
1988 = 118.3	2001 = 177.1	2014 = 236.7
1989 = 124.0	2002 = 179.9	2015 = 237.0
1990 = 130.7	2003 = 184.0	

Potential Flooding Losses. This plan uses worst-case, real-life damages to calculate potential flood losses, and assumes that historic patterns will hold for the future. The worst case flood is the April Fool's Day flood of 1987, which resulted in a Presidential Disaster Declaration of \$100,000,000 in damages to 10 counties. The population of these 10 counties was 758,287 (1980 Census). The per capita cost of the 1987 flood was \$132 (\$100,000,000 divided by 758,287). Using the Consumer Price Index, the per capita cost in 2015 dollars would be \$275 (multiply \$132 by 237.0, the CPI for 2015, and divide by 113.6, the CPI for 1987).

The methodology for calculating potential losses in Somerset County is to assume flood losses based on damages of \$275 per capita. Each town's 2010 population is multiplied by \$275 to get potential flood damages.

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Potential Flooding Damages in Somerset County		
Town	Year-Round Population	Potential Flooding Damages (Population x \$275)
Anson	2,511	\$690,525
Athens	1,019	\$280,225
Bingham	922	\$253,550
Cambridge	462	\$127,050
Canaan	2,275	\$625,625
Caratunk	69	\$18,975
Cornville	1,314	\$361,350
Detroit	852	\$234,300
Embden	939	\$258,225
Fairfield	6,735	\$1,852,125
Harmony	939	\$258,225
Hartland	1,782	\$490,050
Jackman	862	\$237,050
Madison	4,855	\$1,335,125
Mercer	664	\$182,600
Moose River	218	\$59,950
Moscow	512	\$140,800
New Portland	718	\$197,450
Norridgewock	3,367	\$925,925
Palmyra	1,986	\$546,150
Pittsfield	4,215	\$1,159,125
Ripley	488	\$134,200
St. Albans	2,005	\$551,375
Skowhegan	8,589	\$2,361,975
Smithfield	1,033	\$284,075
Solon	1,053	\$289,575
Starks	640	\$176,000
Total, Towns	51,024	\$14,031,600
Plantations (6)		
Brighton Plt.	70	\$19,250
Dennistown Plt.	33	\$9,075
Highland Plt.	73	\$20,075
Pleasant Ridge Plt.	93	\$25,575
The Forks Plt.	37	\$10,175
West Forks Plt	60	\$16,500
Total, Plantations	366	\$100,650
Unorganized	838	\$230,450
Total Somerset	52,228	\$14,362,700

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Potential Severe Winter Storm Losses. This plan uses worst-case, real-life damages to calculate potential severe winter storm damages, and assumes that historic patterns will hold for the future. For Somerset County, the worst storm is the ice storm of 1998, which resulted in a statewide Presidential Disaster Declaration of \$47,748,466. The State's population was 1,227,928 (1990 Census), so the per capita cost was \$39 (divide \$47,748,466 by 1,227,928). Using the Consumer Price Index, the per capita cost in 2015 dollars would be \$57 (multiply \$39 by 237.0, the CPI for 2015, and divide by 163.0, the CPI for 1998).

The methodology for calculating potential losses in Somerset County is to assume severe winter storm losses based on \$57 per capita. Each town's 2010 population is multiplied by \$57 to get potential severe winter storm damages. The breakdown of potential winter storm losses is shown in the table on the next page.

Severe Summer Storms

Hurricane damages are included in the Severe Summer Storm Events category profiled in this Plan, and not as a separate category due to the low occurrence of hurricanes in Somerset County, as noted earlier in this Plan. Worst case, real life damages were used to calculate potential damages from hurricanes

The most devastating hurricane to hit Somerset County may have been Hurricane Edna in 1954. While county damage estimates are not available, statewide hurricane damages amounted to \$7,000,000 and eight deaths. Based on the US Census, Maine's 1950 population was 913,774, resulting in per capita damage costs of \$8. In 2015 dollars, this would be \$70 (multiply \$8 by the 2015 CPI of 237.0 and divide by the 1954 CPI of 26.9).

For Somerset County as a whole, potential hurricane damages from a hurricane could be as high as \$3,655,960 (multiply the 2010 population of 52,288 by \$70). The breakdown of potential hurricane losses is shown in the table on page 4-39

Wildfires

This plan uses worst-case, real-life damages to calculate potential wildfire losses, and assumes that historic patterns will hold for the future. The 1947 fire was the worst on record, although it was actually a series of wildfires that flared over Eastern and Southern Maine. The 1947 fire caused an estimated \$30,000,000 in damages to Cumberland, Hancock, Oxford and York Counties. The population of the four counties was 303,634 in 1940. The calculated per capita damages was \$99 (divide \$30,000,000 by 303,634). The per capita damage in 2015 dollars would be about \$1,052 (multiply \$99 by 237.0, the CPI for 2015, and divide by 22.3, the CPI for 1947). While there is significantly more development in each of these counties today than there was in 1947, fire-fighting capabilities have also increased substantially since that time so there may be no need to further increase the damage estimate. The probability that a wildfire such as the 1947 fire will hit Somerset County during the five-year period covered by this Plan is low.

The methodology for calculating potential wildfire losses in Somerset County is based on the per capita damages that occurred in the 1947 fire in Cumberland, Hancock, Oxford and York Counties as described in the paragraph above. Multiply each town's population by \$1,052 to get potential wildfire damages.

The breakdown of potential wildfire losses is shown in the table on page 4-40.

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Potential Severe Winter Storm Damages in Somerset County		
Town	Year-Round Population	Potential Severe Winter Storm Damages (Population x \$57)
Anson	2,511	\$143,127
Athens	1,019	\$58,083
Bingham	922	\$52,554
Cambridge	462	\$26,334
Canaan	2,275	\$129,675
Caratunk	69	\$3,933
Cornville	1,314	\$74,898
Detroit	852	\$48,564
Embden	939	\$53,523
Fairfield	6,735	\$383,895
Harmony	939	\$53,523
Hartland	1,782	\$101,574
Jackman	862	\$49,134
Madison	4,855	\$276,735
Mercer	664	\$37,848
Moose River	218	\$12,426
Moscow	512	\$29,184
New Portland	718	\$40,926
Norridgewock	3,367	\$191,919
Palmyra	1,986	\$113,202
Pittsfield	4,215	\$240,255
Ripley	488	\$27,816
St. Albans	2,005	\$114,285
Skowhegan	8,589	\$489,573
Smithfield	1,033	\$58,881
Solon	1,053	\$60,021
Starks	640	\$36,480
Total, Towns	51,024	\$2,908,368
Plantations (6)		
Brighton Plt.	70	\$3,990
Dennistown Plt.	33	\$1,881
Highland Plt.	73	\$4,161
Pleasant Ridge Plt.	93	\$5,301
The Forks Plt.	37	\$2,109
West Forks Plt	60	\$3,420
Total, Plantations	366	\$20,862
Unorganized	838	\$47,766
Total Somerset	52,228	\$2,976,996

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Potential Hurricane Damages in Somerset County		
Town	Year-Round Population	Potential Hurricane Damages (Population x \$70)
Anson	2,511	\$175,770
Athens	1,019	\$71,330
Bingham	922	\$64,540
Cambridge	462	\$32,340
Canaan	2,275	\$159,250
Caratunk	69	\$4,830
Cornville	1,314	\$91,980
Detroit	852	\$59,640
Embden	939	\$65,730
Fairfield	6,735	\$471,450
Harmony	939	\$65,730
Hartland	1,782	\$124,740
Jackman	862	\$60,340
Madison	4,855	\$339,850
Mercer	664	\$46,480
Moose River	218	\$15,260
Moscow	512	\$35,840
New Portland	718	\$50,260
Norridgewock	3,367	\$235,690
Palmyra	1,986	\$139,020
Pittsfield	4,215	\$295,050
Ripley	488	\$34,160
St. Albans	2,005	\$140,350
Skowhegan	8,589	\$601,230
Smithfield	1,033	\$72,310
Solon	1,053	\$73,710
Starks	640	\$44,800
Total, Towns	51,024	\$3,571,680
Plantations (6)		
Brighton Plt.	70	\$4,900
Dennistown Plt.	33	\$2,310
Highland Plt.	73	\$5,110
Pleasant Ridge Plt.	93	\$6,510
The Forks Plt.	37	\$2,590
West Forks Plt	60	\$4,200
Total, Plantations	366	\$25,620
Unorganized	838	\$58,660
Total Somerset	52,228	\$3,655,960

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Potential Wildfire Losses in Somerset County		
	Year-Round Population 2010	Potential Wildfire Damages (Population x \$1,052)
Towns		
Anson	2,511	\$2,641,572
Athens	1,019	\$1,071,988
Bingham	922	\$969,944
Cambridge	462	\$486,024
Canaan	2,275	\$2,393,300
Caratunk	69	\$72,588
Cornville	1,314	\$1,382,328
Detroit	852	\$896,304
Embden	939	\$987,828
Fairfield	6,735	\$7,085,220
Harmony	939	\$987,828
Hartland	1,782	\$1,874,664
Jackman	862	\$906,824
Madison	4,855	\$5,107,460
Mercer	664	\$698,528
Moose River	218	\$229,336
Moscow	512	\$538,624
New Portland	718	\$755,336
Norridgewock	3,367	\$3,542,084
Palmyra	1,986	\$2,089,272
Pittsfield	4,215	\$4,434,180
Ripley	488	\$513,376
St. Albans	2,005	\$2,109,260
Skowhegan	8,589	\$9,035,628
Smithfield	1,033	\$1,086,716
Solon	1,053	\$1,107,756
Starks	640	\$673,280
Total, Towns	51,024	\$53,677,248
Plantations		
Brighton Plt.	70	\$73,640
Dennistown Plt.	33	\$34,716
Highland Plt.	73	\$76,796
Pleasant Ridge Plt.	93	\$97,836
The Forks Plt.	37	\$38,924
West Forks Plt	60	\$63,120
Total, Plantations	366	\$385,032
Total, Unorganized	838	\$881,576
Total, Somerset	52,228	\$54,943,856

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Assessing Vulnerability: Analyzing Development Trends

Requirement (201.6(c)(2)(ii)(C): (The plan shall 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 use decisions.

There has been no change in vulnerability in Somerset County over the past five years. Somerset County is located in the western Maine and is largely rural. A majority of the land consists of forests, wetlands and water bodies, although there are some areas devoted to farming. The largest community is Skowhegan, which contains 8,589 people. Other communities with a population in excess of 2,000 people include Anson (2,511), Canaan (2,275), Fairfield (6,735), Madison (4,855), Norridgewock (3,367), Pittsfield (4,215) and St. Albans (2005).

According to the 2010 Municipal Status Report prepared by the Kennebec Valley Council of Governments, only seven municipalities in Somerset County have town-wide zoning ordinances (Cambridge, Caratunk, Fairfield, Harmony, New Portland, Palmyra and Pittsfield). Land use controls consist primarily of municipal and state-imposed shoreland zoning ordinances that apply to the land area within 250 feet of lakes, larger rivers and certain wetlands, floodplain management ordinances, and some subdivision review ordinances. The State's Land Use Planning Commission (LUPC) has adopted a comprehensive set of land use regulations for the 83 townships that comprise Somerset County's portion of the Unorganized Territory. LUPC's land use controls include land use districts that are comparable to town-wide zoning. In December of 2010, a statewide building code went into effect which regulates methods of construction in all jurisdictions.

A number of communities have prepared comprehensive plans, and many of these can be used to support municipal zoning ordinances in the event that these communities choose to enact zoning controls. The following table, based on KVCOG's 2010 Municipal Status Report, lists communities that have adopted comprehensive plans that have been found by the Maine State Planning Office to be consistent with Maine's growth management law:

Towns with Consistent, Locally adopted Comprehensive Plans	
Anson	Madison
Athens	New Portland
Bingham	Norridgewock
Cambridge	Pittsfield
Caratunk	Ripley
Detroit	St. Albans
Fairfield	Skowhegan
Harmony	Solon
Jackman	

Source: KVCOG Municipal Status Report, 2010

Development Trends

According to the Comprehensive Economic Development Strategy for Kennebec, Somerset, and Western Waldo Counties, 2007, prepared by the Kennebec Valley Council of Governments (KVCOG), there are a number of economic constraints that are currently impacting Somerset County:

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Constraints on Growth in the Regional Economy.

The principal impediments identified in this analysis include:

1. Statewide Business Climate.
 - a. High Workers Compensation Insurance costs.
 - b. Outmoded and inefficient State and local tax structure.
 - c. Inefficient Regulatory Environment.
 - d. Rapidly and sharply escalating costs of health care and health Insurance.
2. Transportation limitations and freight costs.
3. Distance to market for the major manufactured products of the region.
4. Insufficient capital to finance new enterprises.
5. Competition from Canadian lumber and other wood products.
6. Continuing dependence upon a few, large mature manufacturing industries that account for a substantial portion of relatively high wage manufacturing employment.
7. The ongoing decline in manufacturing employment.
8. A comparatively low level of educational attainment.
9. The out-migration of persons under 35.
10. Slow population growth.

As noted earlier in this Assessment, there has been very little growth in Somerset County in the last 20 years, and very little growth is expected during the foreseeable future. Between 1990 and 2000, Somerset County's population increased from 49,767 to 50,888, a growth of 1,121 or 2.25%. Between 2000 and 2010, the County's population increased from 50,888 to 52,228, a gain of 1,340 people or 2.6%.

Maine's Office of Policy and Management estimates that Somerset County will gradually lose population in the coming years. The Office's projections show a 2022 population of 50,695, which is a decline of 1,533 people, or 3% from the 2010 population of 52,228. By 2032, the County's population is expected to further decline to 48,454, which is a loss of 2,241 people, or 4.4% from the projected 2022 population of 50,695. Given this declining population, it is likely that there will be very little in the way of new buildings, infrastructure or critical facilities and little likelihood that any new construction would be vulnerable to the identified hazards. The table below shows town-by-town projections to 2032.

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Population Projections – Somerset County						
	Census	Projections				
	2010	2017	2022	2027	2032	# Change 2010-2032
Anson	2,511	2,443	2,383	2,311	2,227	-284
Athens	1,019	1,048	1,069	1,084	1,090	71
Bingham	922	868	827	783	736	-186
Cambridge	462	447	433	418	400	-62
Canaan	2,275	2,286	2,294	2,288	2,267	-8
Caratunk	69	61	55	48	42	-27
Cornville	1,314	1,320	1,322	1,317	1,303	-11
Detroit	852	830	815	795	771	-81
Embden	939	967	981	990	991	52
Fairfield	6,735	6,577	6,455	6,300	6,109	-626
Harmony	939	920	902	879	852	-87
Hartland	1,782	1,711	1,657	1,595	1,526	-256
Jackman	862	887	906	918	924	62
Madison	4,855	4,767	4,710	4,628	4,519	-336
Mercer	664	664	661	653	642	-2
Moose River	218	213	208	202	195	-23
Moscow	512	500	486	469	450	-62
New Portland	718	689	664	635	604	-114
Norridgewock	3,367	3,319	3,275	3,214	3,133	-234
Palmyra	1,986	1,935	1,895	1,846	1,787	-199
Pittsfield	4,215	4,099	4,010	3,901	3,771	-444
Ripley	488	488	487	484	477	-11
St. Albans	2,005	2,023	2,032	2,028	2,010	5
Skowhegan	8,589	8,384	8,198	7,970	7,700	-889
Smithfield	1,033	1,026	1,022	1,013	997	-36
Solon	1,053	1,087	1,107	1,120	1,126	73
Starks	640	633	630	623	612	-28
Total, Towns	51,024	50,192	49,484	48,512	47,262	-3,763
Plantations (6)						
Brighton Plt.	70	64	58	53	47	-23
Dennistown Plt.	33	35	36	37	38	5
Highland Plt.	73	75	78	79	80	7
Pleasant Ridge Plt.	93	94	94	95	94	1
The Forks Plt.	37	37	37	37	36	-1
West Forks Plt	60	62	64	65	66	6
Total, Plantations	366	367	367	366	361	-5
Unorganized	838	842	844	840	831	-7
Total Somerset	52,228	51,401	50,695	49,718	48,854	-3,374

Source: Maine Office of Policy and Management

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Multi-Jurisdictional Risk Assessment	
Requirement §201.6(c)(2)(iii): For multi-jurisdictional plans, the risk assessment must assess each jurisdiction's risks where they vary from the risks facing the entire planning area.	
Element	A. Does the new or updated plan include a risk assessment for each participating jurisdiction as needed to reflect unique or varied risks?

Somerset County is a large, sparsely populated, rural County located in Western Maine. There are 52,228 people living in 3,927 square miles. There are 27 municipalities in the County, as well as six plantations and 83 unorganized townships in Somerset County's portion of the Unorganized Territory.

The Somerset County Hazard Mitigation Team analyzed multi-jurisdictional risks for flooding, winter storms, summer storms and wildfires. The team identified flooding as the most significant risk to the entire County (see page 4-36 for a town-by-town summary of damages from various floods). The Team rated severe winter storms as the 2nd most significant risk (see page 4-38 for a town-by-town summary of damages), followed by summer storms (see damage table on page 4-39) and wildfires (see town-by-town summary of fires on page 4-40).

Although all areas are at risk from forest fires, it is the less densely-populated areas of the smaller communities that could face extensive acreage losses. This is due to the lack of roadways (accessibility) within the forest land. Additionally, the resources of municipal fire departments for fighting wildfires are extremely limited, due to the small population base and the fact that volunteers make up the majority of the fire fighting forces.

MAPS

The following pages contain maps of the entire geographic area of Somerset County, as well as maps of the 27 towns and six plantations.

SECTION 5. MITIGATION STRATEGIES

Mitigation Strategy	
<p>Requirement: §201.6(c)(3): (The plan must include) a mitigation strategy that provides the jurisdiction's blueprint for reducing the potential losses identified in the risk assessment, based on existing authorities, policies, programs and resources, and its ability to expand on and improve these existing tools. This section shall include:</p> <ul style="list-style-type: none"> (i) A description of mitigation goals to reduce or avoid long-term vulnerabilities to the identified hazards. (ii) 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. All plans approved by FEMA after October 1, 2008, must also address the jurisdiction's participation in the NFIP, and continued compliance with NFIP requirements, as appropriate. (iii) An action plan describing how the actions identified in paragraph (c)(3)(ii) of this section will be prioritized, implemented and administered by the local jurisdiction. 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. (iv) For multi-jurisdictional plans, there must be identifiable action items specific to the jurisdiction requesting FEMA approval or credit of the plan. 	
Element	C1: Does the plan document each jurisdiction's existing authorities, policies, programs and resources, and its ability to expand on and improve these existing policies and programs?
	C2: Does the Plan address each jurisdiction's participation in the NFIP and continued compliance with NFIP requirements, as appropriate?
	C3: Does the Plan include goals to reduce/avoid long-term vulnerabilities to the identified hazards?
	C4: Does the Plan identify and analyze a comprehensive range of specific mitigation actions and projects for each jurisdiction being considered to reduce the effects of hazards, with emphasis on new and existing buildings and infrastructure?
	C5: Does the Plan contain an action plan that describes how the actions identified will be prioritized (including cost benefit review), implemented, and administered by each jurisdiction?
	D2: Was the plan revised to reflect progress in local mitigation efforts? See Maintenance Section
	D3: Was the plan revised to reflect changes in priorities? See Maintenance Section

C1. Existing Authorities, Policies, Programs and Resources

Below is a summary of existing authorities, policies, programs and resources available to accomplish hazard mitigation. See also the table that follows this summary.

- **Town Manager, Administrator, Administrative Assistant to the Selectmen:** Some towns in Somerset County have a town manager, others have an administrator whose duties may vary from those of a town manager, and still others have an administrative assistant to the selectmen who may serve as staff to the selectmen but may not have the powers of a town

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manager to hire staff. In the table below, "TM" indicates town manager; "A" indicates administrator, and "AA" indicates administrative assistant.

- **Board of Selectmen or Board of Assessors:** If a town has no Town Manager, that role is filled by a Board of Selectmen, or in the case of a plantation, by a Board of Assessors. Depending on the community's needs and financial resources, the Board might also serve as Road Commissioner.
- **Staff Resources:** Staff resources, where available, usually consist of a planner or community development director. There are no towns in Somerset County with staff resources devoted exclusively to hazard mitigation.
- **Public Works or Road Commissioner:** Some of the larger towns have a public works director, but most have a road commissioner. The road commissioner might also be the town manager or board of selectmen.
- **Flood Hazard Ordinance:** All the towns that are in the Flood Insurance Program have a flood hazard ordinance in effect. In the following table, the designation "LUPC" indicates that the plantation's flood plains are under the regulatory jurisdiction of the State's Land Use Planning Commission (LUPC).
- **All the towns in Somerset County** are required to have a shoreland zoning ordinance, whether adopted by the municipality or imposed by the Maine Department of Environmental Protection. The designation LUPC indicates that the plantation's shorelands are under the regulatory jurisdiction of the State's Land Use Planning Commission.
- **Form of Government:** In the following table, the letters "ST" indicate the selectmen/town meeting form of government; a "Council" indicates a council form of government and the designation LUPC indicates that the plantation is governed by the State's Land Use Planning Commission.
- **Resources:** In addition to staffing or other expertise, funding resources are from local taxes and/or grants that are funded by taxes or private donations.

All jurisdictions in Somerset County could expand and improve their existing capabilities if additional funds, beyond their existing tax bases, became available to address hazard mitigation projects listed on the following pages.

Key to table on next page

"X" - Yes

"MGR" – Town Manager

"AA" – Administrative Assistant

"LUPC" – Maine Land Use Planning Commission

"S/TM" – Selectmen/Town Meeting form of government

"S/TM/MGR" - Selectmen, Town Meeting, Manager form of Government

"S/TM/AA" - Selectmen, Town Meeting, Administrative Assistant form of Government

"Council/TM/MGR" – Council/Town Meeting/Manager form of government

"Council/Mayor/MGR" - Council/Mayor/Manager form of government

"Assessors" – Assessors/Annual Meeting form of Government

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Authorities, Policies, Programs and Resources Available to Accomplish Hazard Mitigation							
Towns (27)	Town/City Manager	Staff involved in Local Planning	Public Works or Road Commissioner	EMA Director	Flood Hazard Ordinance	Shoreland Zoning Ordinance	Form of Government
Anson	AA		X	X	X	X	S/TM
Athens			X	X		X	S/TM
Bingham			X	X	X	X	S/TM
Cambridge	AA		X	X	X	X	S/TM/AA
Canaan			X	X	X	X	S/TM
Caratunk			X	X	X	X	S/TM
Cornville			X	X	X	X	S/TM
Detroit			X	X	X	X	S/TM
Embden			X	X	X	X	S/TM
Fairfield	MGR		X	X	X	X	Council/TM/MGR
Harmony			X	X	X	X	S/TM
Hartland	MGR		X	X	X	X	S/TM
Jackman			X	X	X	X	S/TM/MGR
Madison	MGR	X	X	X	X	X	S/TM/MGR
Mercer			X	X	X	X	S/TM
Moose River			X	X		X	S/TM
Moscow			X	X	X	X	S/TM
New Portland	MGR		X	X	X	X	S/TM/MGR
Norridgewock	MGR		X	X	X	X	S/TM/MGR
Palmyra	AA		X	X	X	X	S/TM/AA
Pittsfield	MGR		X	X	X	X	Council/Mayor/MGR
Ripley	AA		X	X	X	X	S/TM/AA
St. Albans	MGR		X	X	X	X	S/TM/MGR
Skowhegan	MGR	X	X	X	X	X	S/TM/MGR
Smithfield	AA		X	X	X	X	S/TM/AA
Solon			X	X	X	X	S/TM
Starks			X	X	X	X	S/TM
Plantations (6)							
Brighton Plt.			X	X	LUPC	LUPC	Assessors

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Authorities, Policies, Programs and Resources Available to Accomplish Hazard Mitigation							
Towns (27)	Town/City Manager	Staff involved in Local Planning	Public Works or Road Commissioner	EMA Director	Flood Hazard Ordinance	Shoreland Zoning Ordinance	Form of Government
Dennistown Plt.			X	X	LUPC	LUPC	Assessors
Highland Plt.			X	X	LUPC	LUPC	Assessors
Pleasant Ridge Plt.			X	X	LUPC	LUPC	Assessors
The Forks Plt.			X	X	LUPC	LUPC	Assessors
West Forks Plt.			X	X	LUPC	LUPC	Assessors

While Somerset County EMA does not have any direct authority to implement hazard mitigation projects in the municipalities, it does:

- Oversee the preparation of the County Hazard Mitigation Plan and its updates
- Support hazard mitigation planning / training / exercising
- Coordinate activities of local EMA directors and
- Participate in grant application development

C2. Participation in the National Flood Insurance Program (NFIP)

As shown in the table below, all but two of the towns in Somerset County are in the Flood Insurance Program, and as a condition of participation in the program, have enacted floodplain management ordinances that limit new development in floodplain areas. Athens and Moose River do not currently participate in the National Flood Insurance Program due to the fact that serious flooding is not perceived to be an issue and their populations are small.

All six of the plantations in Somerset County and the County's portion of the Unorganized Territory are under the jurisdiction of Maine's Land Use Planning Commission (LUPC). LUPC has agreed to administer and enforce the NFIP for all communities and unorganized areas that are under its control and has modified its requirement to include floodplain management regulations. As shown in the table below, the six plantations are in the NFIP by virtue of being under LUPC jurisdiction.

The table below summarizes the participation of Somerset County municipalities in the NFIP.

Abbreviations

- M: No elevation determined – All Zone A, C and X
- L: Original FIRM by letter - All Zone A, C and X
- NSFHA: No Special Flood Hazard Area – All Zone C

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Somerset County Towns Participating in the NFIP					
Towns	Init FHBM¹	Init FIRM¹	Curr Effective Map Date¹	Reg-Emer Date¹	Adoption and Enforcement²
Anson	7-23-76	7-15-88	7-3-95	7-15-88	X
Athens	-	-	-	-	-
Bingham	7-19-74	9-27-85	9-27-85(M)	9-27-85	X
Cambridge	1-17-75	9-27-85	9-27-85(M)	9-27-85	X
Canaan	4-1-77	9-27-85	9-27-85(M)	9-27-85	X
Caratunk	-	11-1-85	11-1-85(M)	11-1-85	X
Cornville	1-17-75	9-27-85	9-27-85(M)	9-27-85	X
Detroit	2-21-75	8-19-85	8-19-85(M)	8-19-85	X
Emden	2-21-75	9-4-85	9-4-85(M)	9-4-85	X
Fairfield	11-1-74	2-17-88	2-17-88	2-17-88	X
Harmony	4-18-75	9-27-85	9-27-85(M)	9-27-85	X
Hartland	2-21-75	1-1-91	1-1-91(L)	1-1-91	X
Jackman	1-24-75	9-4-85	9-4-85(M)	9-4-85	X
Madison	6-28-74	8-4-88	7-3-95	8-4-88	X
Mercer	1-31-75	8-19-85	5-2-94	8-19-85	X
Moose River	-	-	-	-	
Moscow	12-6-74	11-1-85	11-1-85(M)	11-1-85	X
New Portland	1-27-74	8-19-85	8-19-85(M)	8-19-85	X
Norridgewock	12-6-74	6-3-88	5-6-96	6-3-88	X
Palmyra	11-29-74	8-19-85	8-19-85(M)	8-19-85	X
Pittsfield	9-6-74	8-19-85	1-19-96	8-19-85	X
Ripley	1-3-75	9-27-85	9-27-85(M)	9-27-85	X
St. Albans	4-11-75	9-27-85	9-27-85(M)	9-27-85	X
Skowhegan	10-18-74	1-5-89	9-20-95	1-15-89	X
Smithfield	1-12-75	9-4-85	9-4-85(M)	9-4-85	X
Solon	4-18-75	8-19-85	8-19-85(M)	8-19-85	X
Starks	4-18-75	3-18-87	4-2-00	3-18-87	X
Plantations (6)					
Brighton Plt.			?	?	X
Dennistown Plt.			NSFHA	4-30-84	X
Highland Plt.			NSFHA	4-30-84	X
Pleasant Ridge Plt.	2-14-75	11-1-85	11-1-85(M)	11-1-85	X
The Forks Plt.			NSFHA	4-30-84	X
West Forks Plt			NSFHA	4-30-84	X

¹ Source: FEMA Community Status Book Report as of December, 2016.

² Based on all available information, this community has adopted and continues to enforce a floodplain management ordinance, including regulating new construction in Special Flood Hazard Areas. Somerset EMA is not aware of any new construction in Special Flood Hazard Areas.

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C3. Goals

The Hazard Mitigation Planning Team reviewed the goals contained in the 2012 Hazard Mitigation Plan and determined that these goals should continue to guide this Hazard Mitigation Plan - 2017 Update. The goals relate to the hazards profiled in this plan and include the following:

Flooding: Reduce damage, injury and possible loss of life in Somerset County caused by flooding.

Severe Winter Storms: Reduce damage, injury and possible loss of life in Somerset County caused by severe winter storms erosion.

Wildfires: Reduce damage, injury and possible loss of life in Somerset County caused by wildfires.

Severe Summer Storms: Reduce damage, injury and possible loss of life in Somerset County caused by severe summer storms.

C4. Comprehensive Range of Mitigation Actions and Projects

Pages 5-7 to 5-10 contain goals and strategic actions for each of the hazards identified earlier in this report, followed by a town by town summary of prioritized projects beginning on page 5-21.

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**C5. ACTION PLAN
COUNTY-WIDE GOALS AND MITIGATION ACTIONS**

FLOODING

In Somerset County, flooding is most often associated with the effects of severe summer storms, ice and snow build-up in the mountains and rivers, ice dams, and spring run-off. The County contains eight major rivers and many streams and lakes, and is in the foothills and mountains. It also has 74 dams, including 6 high hazard dams and 7 significant hazard dams which could cause significant flooding if there is a dam failure. The most likely damages resulting from flooding are the destruction of roads caused by washouts and undercutting. Most communities that have flooding issues have joined the National Flood Insurance Program and are controlling future development through the enforcement of a local flood hazard ordinance.

Goal: Reduce loss of life, injury and property damage in Somerset County caused by flooding.

Strategic Measures (Actions)	Responsibility	Timeframe	Status
<p>A. Wyman Dam. Continue to work with dam owners to assess the need for additional notification systems.</p> <p>Analysis: As of this writing, all 16 alert sirens at the Bingham fire station are functioning. Sirens at additional locations would expand coverage of potential inundation areas.</p>	County EMA Director	2017-2022 as the need arises	Deleted; not a County responsibility
<p>B. River Flow Advisory Commission. Work with the River Flow Advisory Commission to monitor ice conditions and river flows prior to and during flood events.</p>	County EMA Director	2017-2022 as the need arises	Somerset EMA continues to work with Advisory Commission
<p>C. 406 Funding. Encourage communities to maximize the use of 406 funds through the Public Assistance (PA) Program.</p> <p>Analysis: This is an important program. Because it is written into the PA scope of work and budget, the work can be completed more quickly than by going through the 404 grant program. Because the State pays 15% of the local share, the community only pays 10%, lessening the financial burden after a disaster for infrastructure protection and improvement.</p>	County EMA Director	2017-2022 as 406 funds become available	New

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Strategic Measures (Actions)	Responsibility	Timeframe	Status
<p>D. Dam Safety Drills. Continue to participate in dam safety exercises.</p> <p>Analysis: Because High hazard potential dams can cause loss of life and property damage in the event of a failure, these exercises promote greater awareness of the risk and the need to keep the emergency plans current.</p>	<p>County EMA Director;</p>	<p>2017-2022 as exercises are scheduled</p>	<p>Continue as needed</p>
<p>E. NFIP participation. Promote continued participation in the flood insurance program; as well as actions needed to ensure municipal compliance with flood insurance requirements.</p>	<p>County EMA Director</p>	<p>2017-2022 as workshops are scheduled</p>	<p>Somerset EMA continues to provide NFIP information on its website and at workshops</p>
<p>F. Problem documentation. Encourage municipalities to document the costs of repairing recurring flood damages to ditches, culverts, roadway drainage systems and roads, using tools such as the Road Tracker.</p>	<p>County EMA Director</p>	<p>2017-2022 as opportunities arise</p>	<p>Currently included in workshops and training</p>
<p>G. Grant and Training Opportunities. Inform local officials of training exercises, technical assistance and potential funding opportunities aimed at infrastructure protection.</p> <p>Analysis: Since there is constant turnover of public officials, and funding resources constantly ebb and flow, keeping officials up to date with current information is critical to implementing these strategies.</p>	<p>EMA Director</p>	<p>2017-2022 as opportunities arise</p>	<p>New</p>

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SEVERE WINTER AND SUMMER STORMS

In Somerset County, there have been six federally-declared winter storm disasters since 1998. The worst storm in the past twenty years was the ice storm of January, 1998, which caused \$1.3 million in damage throughout the entire County. Most winter storms in the County are blizzards that overwhelm highway snow removal operations and cause localized power outages. Winter storms can cause injuries or loss of life due to delayed responses from emergency services, the improper use of back-up heat sources, debris falling on an individual, or from storm-related vehicle accidents resulting from icy conditions, road wash-outs or erosion. Major winter storms can shut down businesses, resulting in major losses of income to local businesses and individuals. During the “January thaw,” and in the transition from winter to spring, frost heaves also cause damage to local roads.

In Somerset County, the most likely damages caused by a severe summer storm or hurricane are the loss of electrical power from downed power transmission lines, the blockage of roads from tree debris, wash-outs caused by water runoff that overwhelms local drainage systems, and erosion resulting from river flow. There could be injuries or loss of life caused by delayed responses from emergency services, debris falling on an individual, or from storm-related vehicle accidents resulting from downed tree limbs, road wash-outs. Other types of general damage to personal and real property may be caused by high winds. If power is lost for extended periods of time, major summer storms can shut down businesses, resulting in major losses of income to local businesses and individuals.

Goal: Reduce loss of life, injury and property damage in Somerset County caused by winter storms, water runoff and erosion as well as severe summer storms and hurricanes.

Strategic Measures (Actions)	Responsibility	Timeframe	Status
<p>A. Generators. Assist municipalities in applying for fire or mitigation grant funds for generators at critical facilities that are not in flood hazard areas.</p> <p>Analysis: As of a FEMA policy change in 2012, generators are eligible for mitigation funding. Generators can ensure the proper functioning of critical facilities during emergencies, thus making the whole community more resilient.</p>	<p>County EMA Director</p>	<p>2017-2022</p>	<p>New</p>

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Strategic Measures (Actions)	Responsibility	Timeframe	Status
<p>B. 406 Funding. Maximize the use of 406 funds through the Public Assistance (PA) Program.</p> <p>Analysis: This is an important aspect of the PA program for several reasons. Because it is written into the PA scope of work and budget, the work can be completed more quickly than by going through the 404 grant program. Because the State pays a portion of the local share (15%), the community only pays 10%, lessening the financial burden after a disaster for infrastructure protection and improvement.</p>	<p>County EMA Director</p>	<p>2017-2022 As 406 funds become available</p>	<p>New</p>
<p>C. Website/Media Outreach. Include hazard mitigation information on the EMA website, social media and/or work with the media on public service announcements.</p>	<p>County EMA Director</p>	<p>2016-2021 as needed</p>	<p>New</p>
<p>D. Grant and Training Opportunities. Inform local officials about training exercises, technical assistance and potential funding opportunities aimed at infrastructure protection.</p> <p>Analysis: Since there is constant turnover of public officials, and funding resources constantly ebb and flow, keeping officials up to date with current information is critical to implementing these strategies.</p>	<p>County EMA Director</p>	<p>2017-2022 as opportunities arise</p>	<p>New</p>

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WILDFIRES

Somerset County is subject to wildfires. The most likely damages caused by a wildfire are the loss of life, loss of prime timberland, and the destruction of personal and real property, especially homes. The loss of electricity is also possible, since many high voltage transmission lines pass through heavily wooded areas. Major wildfires may close commerce, resulting in major losses of income to local businesses and individuals.

Goal: Reduce loss of life, injury and property damage in Somerset County caused by wildfires.

Strategic Measures (Actions)	Responsibility	Timeframe	Status
<p>A. Mutual Aid. Evaluate the status of mutual aid agreements. Provide assistance to municipalities for updating as necessary.</p> <p>Analysis: 90 percent of all fire fighters in Maine are volunteers. These volunteers must first leave their regular jobs to access the fire trucks and equipment <u>before</u> going to fight fires. Because few communities can support fully staffed fire departments, mutual aid is both a life-saver, and, cost effective. There is wholehearted support for mutual aid and therefore a great deal of cooperation and support among municipal fire departments. This has bolstered the fire-fighting capabilities of all communities. Somerset EMA is actively involved with municipal emergency response capabilities.</p>	<p>County EMA Director</p>	<p>2017-2022 as needed with EMA Directors and fire departments</p>	<p>New</p>
<p>B. Public Education. Notify local officials of fire prevention workshops offered by the Maine Forest Service (MFS). Include fire prevention information on the EMA website and social media. Include "fire-wise" information on the EMA website and social media.</p> <p>Analysis: The MFS has a wide variety of resources that can be accessed by the communities and businesses. These range from website information, social media, to individual consultations on methods for reducing potential damages from wildfires.</p>	<p>County EMA Director</p>	<p>2017-2022 as needed</p>	<p>New</p>

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Rating of Actions and Establishment of Priorities

The Somerset County Hazard Mitigation Planning Team established priorities by hazard for the general mitigation actions set forth on the previous pages. The Team used the following criteria to rank each of the actions:

1. Life safety
2. Population benefited
3. Probability of community acceptance
4. Probability of funding
5. Feasibility of implementation

Each strategy was rated high (3 points), medium (2 points) or low (1 point) for each of the criteria, with the result that priorities were established by total score (the higher the points, the higher the priority).

Rating of Flood Mitigation Actions						
	Life Safety	Population Benefited	Probability Community Acceptance	Probability Funding	Feasibility of Implementation	Total Score
A. Wyman Dam	3	3	3	2	3	14
B. River Flow Advisory Commission	1	1	3	3	3	11
C. 406 Funding	1	3	3	2	3	12
D. Dam Safety Drills	3	1	2	3	3	12
E. NFIP participation	2	2	3	3	3	13
F. Problem documentation	2	3	3	2	2	12
G. Grant and Training Opportunities. applications	1	3	2	1	1	8

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Rating of Severe Winter and Summer Storm Mitigation Actions						
	Life Safety	Population Benefited	Probability Community Acceptance	Probability Funding	Feasibility of Implementation	Total Score
A. Generators	2	3	3	2	3	13
B. 406 Funding	2	3	3	1	2	11
C. Website Media Outreach	3	3	3	3	3	15
D. Grant and Training Opportunities	2	3	3	1	1	10

Rating of Wildfire Mitigation Actions						
	Life Safety	Population Benefited	Probability Community Acceptance	Probability Funding	Feasibility of Implementation	Total Score
A. Mutual Aid	3	3	2	1	2	11
B. Public education	1	2	3	3	3	12

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PRIORITIZED LOCAL MITIGATION PROJECTS

Projects listed in priority order.—All municipalities in Somerset County identified one or more projects consistent with the County-wide goals and mitigation actions, to mitigate hazards at the local level. The jurisdictions, as well as the specific projects they will pursue, are listed in priority order in the following table. The time frames shown are based upon the permitting requirements and availability of materials and funding.

Criteria for prioritization. The list of local projects was developed separately by each municipality in consultation with the County. Local officials did not use formal, written criteria for the identification of local projects. Local officials utilized the following criteria to develop and informally prioritize the list of projects.

- local knowledge of the frequency and extent of local damages,
- local knowledge of project priorities, based on frequency and severity of damages,
- local knowledge of the 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.

How the actions will be implemented. The table below identifies a timeframe for each project, and identifies one or more parties who will be responsible for implementation. If the towns apply for grant funds, the FEMA benefit/cost analysis will be undertaken.

Use of a cost-benefit analysis. Many of the jurisdictions included in this Plan are small towns run by volunteers. These towns have tight budget constraints. They do not have staff, resources or funding to prepare cost-benefit analyses for the projects included in this plan. 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. This review is at least equal to a formal cost-benefit calculation because each expenditure item will be scrutinized rather than simply being plugged into a formula. For purposes of grant applications and potential grant funding however, MEMA and the County EMA will work with local officials to prepare a formal FEMA cost-benefit analysis (BCA).

Timeframe. Some of the projects have been completed, as indicated in the table of projects. Some are newly listed. However, the clear majority of projects are carry-overs from the last plan update, so an approximate time frame has been assigned to each project, subject to the availability of funds which, in most cases, have not been secured as of this writing.

NOTE: It is understood that the time frames start when funding becomes available and permitting is obtained.

- Short Term: 1-2 years
- Medium Term: 3-4 years
- Long Term: 5 years

Municipal inaction to date does not mean lack of interest. Most municipalities do not have the funds to implement the projects, in part because scarce municipal resources are dedicated to winter and summer road maintenance, school costs and county budgets, to name a few, and municipal finances are also being squeezed by state funding cutbacks in revenue sharing, education, county jails and other areas of government.

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The time frames set forth in this plan are subject to change if circumstances improve and funding sources become available.

Status. The projects were initially included in the Plan based on an expectation that there would be sufficient federal funds to help pay for many of the projects, but this has not been the case. Many municipalities simply do not have the resources to construct these projects using only local funds, and this has been indicated by the phrase “deferred, lack of funds.”

Potential Funding Sources.

Potential funding sources for local projects include, but are not limited to:

- Local tax money
- MaineDOT local road assistance funds
- FEMA Hazard Mitigation Assistance (HMA) grant funds
- Maine Department of Environmental Protection (DEP) culvert grants
- Community Development Block Grant (CDBG) funds
- Other (e.g. private benefactors, emerging grant programs)

D2. Progress in Local Mitigation Efforts

The table below reflects progress in local mitigation efforts. See status column.

D3. Revisions to Reflect Changes in Priorities

The table below reflects progress in local mitigation efforts. See discussion on how projects were prioritized, page 5-14.

Note: References to culverts on the following pages refer to upsizing or lengthening culverts, unless otherwise stated. Over the years, FEMA has established project useful life standards for typical mitigation project types. FEMA’s project useful life standard for culverts ranges from 25-50 years, depending on type of materials used. Other examples are: generators - 19 years, elevations – 30 years, and acquisition/demolitions - 100+ years.

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Prioritized Mitigation Projects in Somerset County

Town	Project (in Priority Order)	Cost	Time Frame	Responsible Agency	Status
Anson	1. Spear Hill Rd; upgraded with replacement bridge at Getchell Brook, 16' x 21'.	\$65,000	Completed	Road Commissioner	Completed
	2. Madison St; elevate 1,000' x 21' x 6'; repave.	\$125,000	Long Term	Road Commissioner	Deferred. Lack of funding
	3. Hollin Waite Rd; excavated 75' x 21' x 3'; installed geo textile fabric and refilled.	\$13,000	Completed	Road Commissioner	Completed
	4. Elevate roads subject to flooding including Hollin Waite Hill Road (Dane Corner); Madison Street on the end, Mayhew Road (also add culverts), Greenleaf Road	Unknown	Long Term	Road Commissioner	New
	5. Improve ditching, upsize culverts as needed.	Unknown	Long Term	Road Commissioner	New
Athens	1. Lords Hill Circle; ditch 12,000', install 15" x 40' culvert.	\$25,000	Short Term	Road Commissioner	75% Completed; ditching continuing
	2. Gilman Rd; ditched 1,000'.	\$2,200	Completed	Road Commissioner	Completed
	3. Hall Farm Rd; install (3) 18" x 40' culverts.	\$3,500	Short Term	Road Commissioner	Partially Completed
	4. Taylor Rd; upsize 18" x 40' & 36" x 40' culverts.	\$5,500	Short Term	Road Commissioner	Partially Completed
	5. South Merrill Rd; ditch 3,500'.	\$7,000	Short Term	Road Commissioner	Partially Completed
	6. Stickney Hill Rd; ditched 4,000'.	\$8,000	Completed	Road Commissioner	Completed
	7. Ward Hill Rd; ditched 500'.	\$1,000	Completed	Road Commissioner	Completed

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Town	Project (in Priority Order)	Cost	Time Frame	Responsible Agency	Status
(Athens)	8. Fox Hill Rd; ditch 1,000'.	\$2,000	Short Term	Road Commissioner	Partially Completed
	9. Leavitt Rd; ditch 4,500'.	\$9,000	Short Term	Road Commissioner	Partially Completed
	10. Floyd French Rd; upsize 15" x 32' culvert.	\$12,000	Short Term	Road Commissioner	Deferred. Lack of funding
Bingham	1. Geo engineer Kennebec River to return to original channel.	\$75,000	Long Term	Selectmen	Deferred. Lack of funding
	2. Geo engineer Austin Stream to return to original channel.	\$35,000	Long Term	Selectmen	Deferred. Lack of funding
	3. Installed additional alarm system for Wyman Dam.	\$15,000	Completed	Selectmen/Dam Owner	Completed
	4. Emergency generator for ambulance, communications center and high school.	\$18,000	Medium Term	Fire Department	Partially Completed, high school only
	5. Mahoney Hill Rd; elevated 400' x 4' x 20'; upsized (2) 36" x 40' culverts.	\$25,000	Completed	Road Commissioner	Completed
	6. Brighton Rd; upsize (3) 36" x 40' culverts.	\$12,000	Medium Term	Road Commissioner	Partially Completed
	7. Improve ditching, upsize culverts as needed.	Unknown	Long Term	Road Commissioner	New
Brighton Plantation	1. Lords Hill Circle; ditch 12,000', install 15" x 40' culvert.	\$25,000	Short Term	Road Commissioner	75% Completed; ditching continuing
	1. Burden Hill Rd; ditch 1,000' & upsize 24" x 32' culvert.	\$3,500	Short Term	Road Commissioner	Deferred. Lack of funding
Cambridge	2. Ham Hill Rd; ditch 2,500'.	\$5,000	Short Term	Road Commissioner	Deferred. Lack of funding

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Town	Project (in Priority Order)	Cost	Time Frame	Responsible Agency	Status
Canaan	1. Strickland Rd; elevated 2,000' x 20' x 2'; ditched 4,000' with check dams & upsized 18" x 30' culvert.	\$82,000	Completed	Road Commissioner	Completed
	2. Moores Mill Bridge: Upgrade with replacement bridge	\$250,000	Long Term	Road Commissioner	New
	3. Improve ditching, upsize culverts as needed	\$50,000	Long Term	Road Commissioner	Deferred. Lack of funding
Caratunk	1. Pleasant Pond Rd; upsized 3' x 4' x 40' box culvert; rip rap intake and outflow.	\$25,000	Completed	Road Commissioner	Completed
	2. Main St; upsized 36" x 40' culvert and rip rap.	\$5,500	Completed	Road Commissioner	Completed
	3. Improve ditching, upsize culverts as needed	Unknown	Long Term	Road Commissioner	New
Cornville	1. James Rd; improved bridge abutments; added wing walls 5' x 5'; added 3' x 40' overflow culvert.	\$35,000	Completed	Road Commissioner	Completed
	2. Babcock Rd; ditched 200'; upsized 18" x 40' culvert.	\$2,000	Completed	Road Commissioner	Completed
	3. Improve ditching, upsize culverts as needed	\$50,000	Long Term	Road Commissioner	Deferred. Lack of funding
Dennistown	1) Improve ditching, upsize culverts as needed	\$50,000	Long Term	Town has only 1/2 mile of local roads and a population of 30.	Deferred. Lack of funding
Detroit	1. Bassford Rd; ditched 10,000'.	\$20,000	Completed	Road Commissioner	Completed
	2. Horseback Rd; improve bridge abutments.	\$17,000	Long Term	Road Commissioner	Deferred. Lack of funding
	3. Improve ditching, upsize culverts as needed.	Unknown	Long Term	Road Commissioner	New

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Town	Project (in Priority Order)	Cost	Time Frame	Responsible Agency	Status
Embden	1. Lords Hill Circle; ditch 12,000', install 15" x 40' culvert.	\$25,000	Short Term	Road Commissioner	75% Completed; ditching continuing
	2. Take steps to make the Embden School an Emergency Shelter.	\$20,000	Short Term	Selectmen	Deferred. Lack of funding
	3. Dunbar Hill Road; upgrade road due to ledge coming out of the ground.	\$100,000	Medium Term	Road Commissioner	Deferred. Lack of funding
Fairfield	1. Old Center Rd; lengthened 72" culvert by 30' & rip rap intake & outflow.	\$11,000	Completed	Road Commissioner	Completed
	2. Improve ditching, upsize culverts as needed	\$50,000	Long Term	Road Commissioner	Deferred. Lack of funding
Harmony	1. North Rd; ditched 500'; installed check dams.	\$2,000	Completed	Road Commissioner	Completed
	2. Traffon Rd; ditched 200'; upsized 24" x 38' culvert & rip rap.	\$3,500	Completed	Road Commissioner	Completed
	3. Brown Rd; upsized 30" x 50' culvert & rip rap.	\$3,500	Completed	Road Commissioner	Completed
	4. Improve ditching, upsize culverts as needed	\$50,000	Short Term	Road Commissioner	Deferred. Lack of funding
Hartland	1. Munn's Flat Rd; upsized to 6' x 6' x 35' box culvert.	\$58,000	Completed	Road Commissioner	Completed
	2. Improve ditching, upsize culverts as needed	\$50,000	Short Term	Road Commissioner	Deferred. Lack of funding
Highland Plantation	1. Sandy Stream Rd; ditched 10,000' and re-shaped road.	\$22,000	Completed	Road Commissioner	Completed

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Town	Project (in Priority Order)	Cost	Time Frame	Responsible Agency	Status
(Highland Plantation)	2. County Rd; ditched 100'; added 10" gravel surface and shape.	\$2,000	Completed	Road Commissioner	Completed
	3. Howard Hill Rd; ditch 3,500'; added 10" gravel surface and shape.	\$35,000	Completed	Road Commissioner	Completed
	4. Improve ditching, upsize culverts as needed	\$50,000	Long Term	Road Commissioner	Deferred. Lack of funding
	1. Installed backflow preventers in 60 basements.	\$15,000	Completed	Public Works	Completed
Jackman	2. Install generators	\$2,500	Short Term	Selectmen	Deferred. Lack of funding
	3. Improve ditching, upsize culverts as needed	\$50,000	Long Term	Road Commissioner	Deferred. Lack of funding
	1. Installed generator for the shelter and communications center	\$40,000	Completed	Fire Department	Completed
Madison	2. Lake Wesserunett; upgrade sluiceway with mechanized system.	\$28,000	Long Term	Public Works	Deferred. Lack of funding
	3. Kincaid Rd; upsized 36" x 28' culvert.	\$2,500	Completed	Road Commissioner	Completed
	4. Lower Mill Road Dam: Remove dam.	Unknown	Long Term	Road Commissioner	New
	5. Shusta Road: Upgrade culvert.	Unknown	Medium Term	Road Commissioner	New
	1. East Sandy River Road; upgrade 8' x 40' culvert.	Unknown	Short Term	Road Commissioner	Deferred. Lack of funding
Mercer	2. Ladd Rd; ditched 5,000'; installed check dams; add 36" x 40' culvert.	\$19,000	Completed	Road Commissioner	Completed

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Town	Project (in Priority Order)	Cost	Time Frame	Responsible Agency	Status
(Mercer)	3. Elm St; ditched 15,000'; added 24" x 40' culvert.	\$32,000	Completed	Road Commissioner	Completed
	4. Rome Road; upgrade box culvert to 8' x 50'.	Unknown	Medium Term	Road Commissioner	Deferred. Lack of funding
	5. Northshore Drive; Upgrade culverts at town line, working with Smithfield	\$50,000	Medium Term	Road Commissioner	Partially Completed
	6. Improve ditching, upsize culverts as needed.	Unknown	Long Term	Road Commissioner	New
	1. Lords Hill Circle; ditch 12,000', install 15" x 40' culvert.	\$25,000	Short Term	Road Commissioner	75% Completed; ditching to continue
	2. Improve ditching, upsize culverts as needed	\$50,000	Long Term	Road Commissioner	Deferred. Lack of funding
Moose River	1. Geo engineered Austin Stream to return to original channel.	\$35,000	Completed	Selectmen	Completed
	2. Stream Rd @ Mink Brook; installed overflow culvert 36" x 60' and repaved.	\$6,000	Completed	Road Commissioner	Completed
	3. Improve ditching, upsize culverts as needed	\$50,000	Long Term	Road Commissioner	Deferred. Lack of funding
New Portland	1. Cole Grove Rd; upgraded bridge abutments; add (2) 16' x 4' culverts.	\$20,000	Completed	Road Commissioner	Completed
	2. Gillman Pond Rd; elevate 1,500' x 1' and stabilize slope.	\$16,000	Long Term	Road Commissioner	Deferred. Lack of funding
	3. Stafford Rd; upsize 36" x 40' overflow culvert.	\$3,500	Short Term	Road Commissioner	Deferred. Lack of funding
	4. Improve ditching, upsize culverts as needed	Unknown	Long Term	Road Commissioner	New

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Town	Project (in Priority Order)	Cost	Time Frame	Responsible Agency	Status
Norridgewock	1. Public library; stabilize river bank along Kennebec River 400' x 16' x 3'.	\$105,000	Short Term	Road Commissioner	Deferred. Lack of funding
	2. Father Rasle Rd; upsized 96" x 40' culvert.	\$8,000	Completed	Road Commissioner	Completed
	3. Sandy River Rd; elevate 400' x 4'; add 48" x 40' cross culvert.	\$25,000	Short Term	Road Commissioner	Deferred. Lack of funding
	4. Improve ditching, upsize culverts as needed	Unknown	Long Term	Road Commissioner	New
Palmyra	1. Libby Hill Road; Upsize 40' of culvert with arched culvert 12' x 4' to better protect Newport water supply.	\$60,000	Long Term	Road Commissioner	New
	2. Smith Rd: Clear 1,000' ditch on Route 100 end. Upgrade culvert to 24" x 40'. Elevate ½ mile of road about 1 1/5 feet.	\$40,000	Short Term	Road Commissioner	New
	3. Improve ditching, upsize culverts as needed	\$50,000	Short Term	Road Commissioner	Deferred. Lack of funding
	4. Shy Rd (b): Add 18" x 40' culvert 2,500 feet in from Route 152. Remove 1,500' of road, replace with good material, approximately 35 yards of gravel. Ditch 1,000'; add 100 yards surface gravel.	\$45,000	Short Term	Road Commissioner	Completed 2017
	5. Bagerboro Rd; ditched 5,000'; blasted ditch line 2,000'.	\$75,000	Completed	Road Commissioner	Completed
	6. Square Rd; ditched 400'; installed check dams in ditch line.	\$2,000	Completed	Board of Selectmen	Completed
	7. Shy Rd (a); placed geo textile on 1,200' x 26' of road; replaced 12' gravel and installed 24" x 30' culvert.	\$32,000	Completed	Road Commissioner	Completed

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Town	Project (in Priority Order)	Cost	Time Frame	Responsible Agency	Status
Pittsfield	1. Paltoma Ave; elevated 7,000' x 2' x 26'; added (7) 24" x 40' cross culverts and repave.	\$360,000	Completed	Road Commissioner	Completed
	2. Improve ditching, upsize culverts as needed	\$50,000	Short Term	Road Commissioner	Deferred. Lack of funding
Pleasant Ridge Pit.	1. Carry Pond Rd; rip rap; installed 50' x 6' x 3' culvert.	\$16,000	Completed	Road Commissioner	Completed
	2. Improve ditching, upsize culverts as needed	\$50,000	Short Term	Road Commissioner	Deferred. Lack of funding
Ripley	1. North Rd; upsize 60" x 30' culvert & rip rap.	\$7,000	Short Term	Road Commissioner	Deferred. Lack of funding
	2. Curtis Rd; upsize 60" x 30' culvert & rip rap.	\$7,000	Short Term	Road Commissioner	Deferred. Lack of funding
	3. Improve ditching, upsize culverts as needed	Unknown	Short Term	Road Commissioner	New
St. Albans	1. Devils Head Rd; ditch 15,000'; install check dams in ditch.	\$34,000	Short Term	Road Commissioner	Deferred. Lack of funding
	2. Springer Rd; upsize to 15' x 50' box culvert with head walls to be engineered.	\$45,000	Short Term	Road Commissioner	Deferred. Lack of funding
	3. Ripley Rd; upsize to 72" x 40' squash pipe; rip rap intake and outflow.	\$10,000	Short Term	Road Commissioner	Deferred. Lack of funding
	4. Denbow Road; Upsize culvert	\$30,000	Short Term	Road Commissioner	Deferred. Lack of funding

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Town	Project (in Priority Order)	Cost	Time Frame	Responsible Agency	Status
Skowhegan	1. Acquire and demolish, or relocate frequently flooded homes, depending on cost beneficial aspects of project and voluntary participation.	Unknown	Long Term	Selectmen	New
	2. Relocate fire station out of floodplain.	\$4.5 million	Long Term	Selectmen, Fire Department	Deferred. Lack of funding
	3. 39 Back Rd; bought out & removed 720 sq' mobile home & restored land.	\$65,000	Completed	Selectmen	Completed
	4. Half Moon Bridge; mitigated damages per engineering report.	\$152,000	Completed	Road Commissioner	Completed
	5. Bigelow Hill Rd; upsized 15" x 50' squash pipe & rip rap intake and outflow.	\$45,000	Completed	Road Commissioner	Completed
	6. Red Bridge Rd; upgrade with replacement bridge 24' x 70'.	\$100,000	Short Term	Road Commissioner	Deferred. Lack of funding
	7. Steward Hill Rd; upsized 15" x 40' squash pipe & rip rap intake and outflow.	\$40,000	Short Term	Road Commissioner	Deferred. Lack of funding
	8. East Ridge Rd; elevated 1,250' x 18"; added 36" x 40' culvert and repave.	\$100,000	Completed	Road Commissioner	Completed
	9. Generator; purchase and install generator for the Recreation Center	\$5,000	Short Term	Selectmen	Deferred. Lack of funding
	10. Improve ditching, upsize culverts as needed	Unknown	Short Term	Road Commissioner	New
Smithfield	1. North Shore Rd; ditched 300'; upsized 84" x 40' culvert & repave.	\$9,000	Completed	Road Commissioner	Completed
	2. Sands Hill Rd; ditched 400'; upsized (3) 24" x 40' culverts.	\$7,000	Completed	Road Commissioner	Completed

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Town	Project (in Priority Order)	Cost	Time Frame	Responsible Agency	Status
(Smithfield)	3. Oaks Hill Rd; ditched 500'; upsized 24" x 40' culvert.	\$2,000	Completed	Road Commissioner	Completed
	4. Bickford Rd; ditched 1,400', upsized 30" x 40' plastic culvert.	\$4,500	Completed	Road Commissioner	Completed
	5. Miller Lane; ditch 1,600', upsize 30" x 40' plastic culvert.	\$5,000	Medium Term	Road Commissioner	Deferred. Lack of funding
	6. Quaker Lane; ditched 450'; upsized 24" x 40' plastic culvert; rip rap and repaved.	\$4,000	Completed	Road Commissioner	Completed
	7. Improve ditching, upsize culverts as needed	Unknown	Short Term	Road Commissioner	New
	1. Parkman Hill Rd; Raised road and lengthened culvert 10' x 50' and rip rap.	\$13,000	Completed	Selectmen	Completed 2007 HMPG DR-1591-05
	2. Purchased generators for fire station and municipal building,	\$12,000	Completed	Selectmen, Fire Department	Completed
Starks	3. Improve ditching, upsize culverts as needed	\$50,000	Long Term	Road Commissioner	Deferred. Lack of funding
	1. Sawyer Mill Rd; upgraded bridge abutments, 19' x 10'.	\$25,000	Completed	Road Commissioner	Completed
	2. Locke Cemetery Rd; ditched 5,000' and added gravel.	\$23,000	Completed	Road Commissioner	Completed
	3. Improve ditching, upsize culverts as needed	\$50,000	Long Term	Road Commissioner	Deferred. Lack of funding

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Town	Project (in Priority Order)	Cost	Time Frame	Responsible Agency	Status
The Forks Plantation	1. Moxie Lake Rd; ditched 600' and seeded and ditched.	\$1,500	Completed	Road Commissioner	Completed
	2. Improve ditching, upsize culverts as needed	\$50,000	Long Term	Road Commissioner	Deferred. Lack of funding
West Forks Plantation	1. Dead River Rd; Lengthened culvert 48" x 32'.	\$4,500	Completed	Road Commissioner	Completed
	2. Improve ditching, upsize culverts as needed	\$50,000	Long Term	Road Commissioner	Deferred. Lack of funding
Unorganized Territory (UT)	1. Lexington, Back Rd; lower portion of road 1,200' x 20' x 4'; add (2) 48" x 60' culverts & pave & toe in 400' low water crossing.	\$36,000	Long Term	Road Commissioner	Deferred. Lack of funding
	2. Lexington, Round Up Rd; add 25' x 10' each end to existing culvert and rip rap intake and outflow.	\$15,000	Short Term	Road Commissioner	Deferred. Lack of funding
	3. Concord, Cool Rd; lower portion of road, 400' x 24' x 2' & paved & toed in 400' x 24' low water crossing.	\$26,000	Completed	Road Commissioner	Completed

SECTION 6. PLAN MAINTENANCE PROCEDURES

Monitoring, Evaluating and Updating the Plan

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

Part 201.6(c)(4) of the Federal Disaster Act Rule requires a formal maintenance process to take place to ensure that the Mitigation Plan remains an active and pertinent document. The plan maintenance process includes a schedule for monitoring and evaluating the plan at least every five years, and continued public participation throughout the plan maintenance process.

Eighteen months prior to the Hazard Mitigation Plan update deadline, Somerset County Emergency Management Agency will organize a Hazard Mitigation Planning Committee meeting. Somerset County EMA will invite the public, own managers, selectmen, EMA directors and other interested parties to participate.

The Hazard Mitigation Planning Committee will review existing hazards of concern and determine whether any new hazards were presented throughout the past four years. The status of current mitigation projects will be updated and new projects will be added as needed. Once all hazards, projects, maps and county information have been updated, the Somerset County Hazard Mitigation Plan draft will be submitted to MEMA for review and recommendations before the final draft is forwarded to FEMA for review and approval pending adoption (APA). After APA, the towns will adopt the plan for final approval and start another five year plan cycle.

A. Monitoring the Plan

Progress on the plan will be monitored via monthly meetings with MEMA and/or meetings with local EMAs and following every federally declared disaster. On an annual basis, Somerset County EMA will meet with EMA directors to conduct a risk assessment and project review. Somerset EMA is responsible for contacting team members and organizing a formal review meeting every four years.

The County EMA also intends to work with MEMA officials, local units of government and others in periods following disasters to better understand how the region can mitigate future damages to roads, critical facilities, residential structures and businesses. The mitigation plan and project application process will also be addressed at each federal disaster declaration kick-off meeting and will be reinforced via email announcements for workshops and grant application deadlines.

B. Evaluating the Plan

Annually and after each disaster declaration, Somerset EMA, in consultation with the Planning Team, will review the hazards risk assessment of the plan, as well as the strategies contained in the strategy section, to determine their relevance to changing situations in the county, as well as changes in state or federal policy, and to ensure that they are addressing current and expected conditions. The parties responsible for the various implementation actions will report on the status of these actions, and, where applicable, will report on which actions worked well, whether difficulties have been encountered, how coordination efforts have been proceeding, and which actions should be revised. This is the same method the County used in the prior Plan for evaluating the Plan.

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C. Updating the Plan

The Somerset County EMA Office will have 18 months to update and make changes to the plan before submitting it to the State Hazard Mitigation Officer. At the beginning of the fourth year of implementation of this Plan, the County EMA will convene a meeting of the local EMA Directors, who will serve as liaisons to other municipal staff and officials. Based on the evaluation of the Plan, proposed changes will be prepared for the following five-year period. The County EMA and the County Hazard Mitigation Planning Team will rely on EMA Directors for input, as well as public input obtained through public workshops, mailings, and phone-in meetings. Proposed changes to the Plan will be submitted to the Maine Emergency Management Agency for review. The State Hazard Mitigation Officer will review the plan prior to submittal to FEMA for conditional approval. After the plan has been conditionally approved by both the State and FEMA, the participating municipalities will adopt the revised plan before receiving final FEMA approval.

Incorporating Mitigation into other Planning Mechanisms	
Requirement §201.6(c)(4)(ii): (The plan shall include a plan maintenance process that includes) a process by which local governments incorporate the requirements of the mitigation plan into other planning mechanisms such as comprehensive or capital improvement plans, when appropriate.	
Element	C6. Does the plan describe a process by which local governments will integrate the requirements of the mitigation plan into other planning mechanisms, such as comprehensive or capital improvement plans, when appropriate?

A. Identification of Local Planning Mechanisms

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 development within the municipalities in Somerset County. Within Maine, most government authority is derived from State statutes and rules and with municipal "Home Rule" ordinances. All of the townships in the Unorganized Territory fall under the jurisdiction of the Maine Land Use Planning Commission, and are therefore controlled and governed by the State of Maine.

Section 5 of this Plan provides the strategies that will make Somerset County more resistant to the hazards that were profiled in the previous sections. Municipalities have already incorporated the strategies recommended by this plan into local planning mechanisms as discussed in the paragraphs below. By adopting this plan, each community, as well as Somerset County, is agreeing to continue implementation of these strategies.

Available planning mechanisms at the municipal level and the extent to which they have incorporated local hazard mitigation include:

- Local comprehensive plans (many of our municipalities have adopted a comprehensive plan). Comprehensive plans are policy documents that address a wide range of issues affecting the future of the community, and those relating to public safety and environmental protection would be consistent with the strategies contained in this plan. In general, local comprehensive plans do not include recommendations on specific projects, although they may contain recommendations that roads and their associated infrastructure be upgraded as funds become available.
- Local flood plain management Ordinances; as documented in Section 5, all but two of Somerset County's municipalities have joined the Flood Insurance Program and have adopted floodplain management ordinances aimed at managing development in flood-prone areas. In addition, 6 plantations (and all of the Unorganized Territory) are in the

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Flood Insurance Program by virtue of being under the regulatory jurisdiction of the State's Land Use Planning Commission.

- Shoreland zoning ordinances; all of the towns in Somerset County are required to have a shoreland zoning ordinance, whether adopted by the municipality or imposed by the Maine Department of Environmental Protection. The State's Land Use Planning Commission has adopted shoreland protection controls for the 6 plantations in Somerset County as well as the County's portion of the Unorganized Territory. Shoreland zoning ordinances contain requirements for locating structures outside of known flood hazard areas and/or for complying with the requirements of municipal flood plain management ordinances.
- Subdivision review requirements; Maine state law contains criteria that local officials must use in conducting subdivision reviews. In addition, many communities have also adopted subdivision regulations aimed at managing growth in their communities.
- Capital improvement plans. Some of the larger municipalities have capital improvement plans; most of the smaller ones do not, but they do have local budgeting processes which are used to examine potential expenditures in detail and establish overall spending priorities;
- Local Budgeting Processes (which are used to examine potential expenditures in detail and establish overall spending priorities);
- Road maintenance planning efforts. These may include priorities for local improvements, but not necessarily engineering studies or cost benefit analyses;
- Emergency management and mitigation planning;
- Fire prevention planning and coordination, including participation in mutual aid agreements and multi-town wildfire training exercises; and
- Grant writing (many of the County's municipalities have been active in applying for grants to address municipal priorities).

In addition, the State has a new building code which became effective in December of 2010. This code addresses some hazards, such as heavy snow loads, although it does not govern the location of structures.

All towns in Somerset 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.

Note: See Strategy section of this plan, pages 5-2 through 5-4, for a town-by-town summary of existing authorities, policies, programs and resources available to accomplish hazard mitigation.

After adoption of the Hazard Mitigation Plan, the Somerset County EMA Office will post a copy of the Plan to its website and notify municipalities with a recommendation that existing programs such as local comprehensive planning efforts, municipal road maintenance planning efforts, and emergency management programs be utilized to their greatest extent to complete the community's mitigation projects.

The County EMA Office will monitor the implementation of projects that were listed by the communities. The County EMA Office will also continue to assist municipalities with the completion of FEMA Hazard Mitigation Assistance (HMA) Grant applications.

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At the local level, there has been progress in some areas, but no known actions in other areas:

- Comprehensive plans – no State money for new plans or updates
- Road maintenance planning efforts – many towns in Somerset County are now using MEMA’s Road Tracker to document annual repair costs
- Emergency management and mitigation planning – limited because of volunteer EMA directors and no budgets, but participation in dam exercises, ICS/NIMS training
- Ordinances –no State money for new plans or updates
- Grant applications – a few of the County’s municipalities have been active in applying for grants to address mitigation issues. Most of the towns are now aware that 406 mitigation funding can be obtained through the Public Assistance Program after a disaster declaration.

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

The County EMA has notified municipal EMAs and local officials of hazard mitigation workshops such as those related to the HMA Grant programs, and workshops with hazard mitigation content such as those sponsored by Maine’s Local Roads Center that deal with the use of geo-textiles.

Continued Public Participation	
Requirement §201.6(c)(4)(iii): (The plan shall include a plan maintenance process that includes) a discussion on how the community will continue public participation in the plan maintenance process.	
Element	A5. Is there discussion on how the community(ies) will continue public participation in the plan maintenance process?
	A6. Is there a description of the method and schedule for keeping the plan current (monitoring, evaluating and updating the mitigation plan within a 5-year cycle)?

Somerset County is committed to involving the public directly in the continued reshaping and updating of the Hazard Mitigation Plan. The Hazard Mitigation Planning Team is responsible for reviewing and updating the Plan. Although the members of the Planning Team represent the public to some extent, all meetings will continue to be open to the public for opportunities to comment on and provide meaningful input on the Plan.

There is constant public access to the mitigation plan via the Somerset EMA website. A hard copy of the hazard mitigation plan will also be available at the Somerset County Emergency Management Agency for review and comment by the public.

Somerset EMA holds quarterly local EMA meetings, participates in municipal Select Board meetings throughout the County, attends fire chief meetings throughout the year. After significant natural hazard events there are informational meetings held to review the actions taken during the event and recommended documentation of the event. Annually, we offer preparedness classes to the citizens of our county through adult education and strive to maintain continuous outreach to the public through displays, our website and newspaper articles.

The Somerset County EMA Office will continue to provide a public comment period at each meeting of the Hazard Mitigation Planning Team. The purpose of the public comment period is to provide a public forum for input. The County EMA Office will be responsible for providing public notice for each

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meeting of the Hazard Mitigation Planning Team, for hosting the meeting, and for including information about the public comment period.

In Somerset County, hazard mitigation is far more than a written plan. It is a critical part of the overall mission of the Somerset County Emergency Management Agency (EMA) and its municipalities and it is fully integrated into all aspects of planning, preparedness, training, response and recovery. A partial list of Somerset County's public outreach efforts includes:

- Maintaining and updating the EMA's website
- Posting draft copies of the Hazard Mitigation Plan on the EMA website
- Communicating with the public on an on-going basis through press releases
- Maintaining emergency communications systems
- Holding meetings and training sessions with local EMA officials;
- Participating in public outreach efforts such as the annual Maine Preparedness Conference, the most recent of which was attended by over 500 people.

The address and phone number of the Somerset County EMA Office is:

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E-mail: Mike.Smith@somersetcounty-me.org