

## SECTION 5. MITIGATION STRATEGIES

<b>Mitigation Strategy</b>
<b>Requirement §201.6(c)(3):</b> The plan shall 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.

The following pages contain goals, objectives and strategic actions for each of the hazards identified earlier in this report, followed by a town by town summary of prioritized projects. The list of local projects was developed separately by each municipality. Local officials did not use formal, written criteria for the identification of local projects. Local officials relied on common sense, local knowledge of the frequency and extent of local damages, local knowledge of which projects were of the highest priority based on frequency and severity of damages, local knowledge of 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.

<b>13. Local Hazard Mitigation Goals</b>	
<b>Requirement §201.6(c)(3)(i):</b> (The hazard mitigation strategy shall include a) description of mitigation goals to reduce or avoid long-term vulnerabilities to the identified hazards.	
<b>Element</b>	<b>A.</b> Does the new or updated plan include a description of mitigation goals to reduce or avoid long-term vulnerabilities to the identified hazards?

### A. Mitigation Goals

See Goal/Mission Statements for flooding (page 5-3), severe winter and severe summer storms (page 5-5) and wildfires (page 5-7).

<b>14. Identification and Analysis of Mitigation Actions</b>	
<b>Requirement §201.6(c)(3)(ii):</b> (The mitigation strategy shall include a) section that identifies and analyzes a comprehensive range of specific mitigation actions and projects being considered to reduce the effects of each hazard, with particular emphasis on new and existing buildings and infrastructure.	
<b>Elements</b>	<b>A.</b> Does the new or updated plan identify and analyze a comprehensive range of specific mitigation actions and projects for each hazard?
	<b>B.</b> Do the identified actions and projects address reducing the effects of hazards on <b>new</b> buildings and infrastructure?
	<b>C.</b> Do the identified actions and projects address reducing the effects of hazards on <b>existing</b> buildings and infrastructure?

### A. Comprehensive Range of Mitigation Actions and Projects

Pages 5-3 to 5-7 contain goals, objectives and strategic actions for each of the hazards identified earlier in this report, followed by a town by town summary of prioritized projects on pages 5-11 to 5- 13.

The goals, objectives and mitigation actions were modified from the goals, objectives and mitigation actions contained in the 2011 Plan. The Hazard Mitigation Planning Team relied heavily on MEMA staff input as well as Sagadahoc County EMA's contacts with individual municipalities for the development of the prioritized mitigation projects.

**B. Actions and Projects that Reduce Hazards on New Buildings and Structures**

**Flooding:** See 2C and 2E

**Severe Winter and Severe Summer Storms:** Note: there are no actions related to new structures because storm-related hazards such as roof collapses are adequately covered by the State's new building code which became effective on December 15, 2010

**Wildfires:** See 2A

**C. Actions and Projects that Reduce Hazards on Existing Buildings and Structures**

**Flooding:** See 2A, 2B, 2D, 3A, 3B and 3C

**Severe Winter and Severe Summer Storms:** See 3A and

**3B Wildfires:** See 2A

**Table 1  
General Goals, Objectives and Mitigation Actions**

**FLOODING**

In Sagadahoc County, the most likely damages caused by flooding are the destruction of roads caused by washouts and undercutting. There are few critical facilities in the 100-year floodplain. All communities have joined the National Flood Insurance Program and are controlling future development through the enforcement of a local flood hazard ordinance. Several communities, such as Phippsburg, have experienced serious flooding and road damage caused by beaver activity.

**Goal/Mission Statement:** Reduce loss of life, injury and property damage in Sagadahoc County caused by flooding.

**Category: Flooding**

Mitigation Action	Responsibility	Time Frame	Status/Rational if No Action	Funding Sources	
<b>Contact List:</b> Update lists of property owners/renters in floodplain areas especially people with functional and sensory needs.	Sagadahoc EMA, Local EMA's	Update every two years	Continue to update list	Local Funds	
Objective: Lessen property damages caused by flooding.					
Mitigation Action	Responsibility	Time Frame	Status/Rational if No Action	Funding Sources	
<b>NFIP Participation:</b> Encourage participation in the flood insurance program where there are flooding problems as well as actions needed to ensure municipal compliance with flood insurance requirements.	County EMA Director, local EMA Directors	Annually	All ten municipalities in the County continue to participate in the NFIP	Local Funds	
<b>Repetitive Loss Properties:</b> Encourage municipalities to apply for funds to address repetitive loss properties as long as it is cost beneficial.	Sagadahoc EMA, local EMA Directors	Annually	Continue to promote strategies to address repetitive loss properties	Local Funds	
<b>Ordinance Enforcement:</b> Enforce local floodplain management ordinances so as to minimize future flood losses caused by new construction.	Code Enforcement Officers, Planning Boards	Annually	Continue to enforce as needed	Local Funds	

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<p><b>Beaver Dams:</b> Undertake pest management control (beavers) at drainage structures.</p>	<p>Municipal Officials</p>	<p>As needed</p>	<p>Continue to Address as needed</p>	<p>Local Funds</p>
<p><b>Improved Maps:</b> Encourage FEMA to continue to improve the accuracy of flood insurance rate maps as new data such as LIDAR becomes available.</p>	<p>Sagadahoc EMA, Local EMA Directors</p>	<p>As new data is available</p>	<p>Continue</p>	<p>Local Funds</p>
<p><b>Culvert Design:</b> Use the Steam Stat web-designed based GIS application developed by USGIS &amp; ESRI to compute stream flow statistics to determine the proper culvert size-based upon the 100-year flood.</p>	<p>Public Work Directors</p>	<p>As needed</p>	<p>New</p>	<p>Local Funds</p>
<p><b>Objective: Ensure critical transportation links.</b></p>				
<p><b>Mitigation Action</b></p>	<p><b>Responsibility</b></p>	<p><b>Time Frame</b></p>	<p><b>Status/Rational if No Action</b></p>	<p><b>Funding Sources</b></p>
<p><b>Problem Documentation:</b> Encourage municipalities to document the costs of repairing recurring flood damages to ditches, culverts, roadway drainage systems and roads.</p>	<p>Sagadahoc EMA, Local EMA's</p>	<p>As applicable</p>	<p>Continue</p>	<p>Local Funds</p>
<p><b>Best Practices:</b> Where recurring problems can be documented using tools such as Road Tracker, encourage towns to participate in Maine DOT and other road building and maintenance best practices ( see appendix for copy of Road Tracker)</p>	<p>County EMA, Municipal Public Works or Contractor</p>	<p>Annually</p>	<p>Continue</p>	<p>Local Funds</p>
<p><b>Grant Applications:</b> Where recurring problems can be documented apply for grants to upgrade roads, culverts, ditches and drainage systems in accordance with plans for making roads safe from flooding</p>	<p>County EMA, Municipal Public Works or Contractor</p>	<p>As applicable</p>	<p>Continue to be deferred, lack of problem documentation has been an obstacle. More towns are beginning to use the road tracker to keep track of local road expenditures.</p>	<p>Local Funds</p>

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<b>Culvert Grants:</b> Use the Maine DEP Culvert Grant Program to replace and upgrade culverts. The program will be funded until 2017.	Public Work Directors	Participate in the program while funds are available	New	Grant
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**SEVERE WINTER AND SEVERE SUMMER STORMS** (combined because many actions are the same for both kinds of storms)

**Severe Winter Storms**

In Sagadahoc County, the most likely damages caused by a severe winter storm event are the loss of electrical power from downed power transmission lines, the blockage of roads from tree debris or winter snow and ice, wash-outs and erosion caused by water runoff that overwhelms local drainage systems, erosion caused by tidal action, high river flows and/or strong winds, and structural failure from heavy snow loads. There could be injuries or loss of life caused by 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. Other types of general damage to personal and real property may be caused by blizzard conditions or high winds. Major winter storms can shut down businesses, resulting in major losses of income to local businesses and individuals.

**Severe Summer Storms**

In Sagadahoc 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 wave action, river flow and/or extreme high tide. 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 or erosion. Other types of general damage to personal and real property may be caused by high winds, including damage to boats and public and private piers and landings. 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/Mission Statement:** Reduce loss of life, injury and property damage in Sagadahoc County caused by severe winter storms, severe summer storms and hurricanes, water runoff and erosion.

**Category: Severe Winter and Severe Summer Storms**

<b>Objective: Lessen loss of life and injuries resulting from severe winter storms and severe summer storms and hurricanes, including the resulting water runoff or erosion.</b>				
<b>Mitigation Action</b>	<b>Responsibility</b>	<b>Time Frame</b>	<b>Status/Rational if no Action</b>	<b>Funding Sources</b>

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<p><b>Public Education:</b> Develop an on-line brochure to educate the public about the dangers of severe storms. Include a link to the MEMA website.</p>	<p>County EMA Director</p>	<p>8 weeks</p>	<p>Continue to educate and inform the public.</p>	<p>County Funds</p>
<p><b>Functional and Sensory Needs Population:</b> Update lists of functional and sensory needs people who would be vulnerable during a power outage. Encourage the public to check on the safety of elderly or inform neighbors and relatives who may be adversely affected by power outages.</p>	<p>Municipal fire departments, Social service agencies. Local EMA Directors, County EMA</p>	<p>Update annually</p>	<p>Continue updating lists.</p>	<p>Local and County Funds</p>
<p><b>Improve Cell Phone Service:</b> Advocate for improved cell phone coverage/service with the existing carriers to ensure the service is operating during and after a storm event.</p>	<p>County and Local EMA Directors</p>	<p>Annually</p>	<p>New</p>	<p>Local Funds</p>
<p><b>Objective: Lessen property damages caused by severe winter storms and the resulting water runoff or erosion.</b></p>				
<p><b>Mitigation Action</b></p>	<p><b>Responsibility</b></p>	<p><b>Time Frame</b></p>	<p><b>Status/Rational if No Action</b></p>	<p><b>Funding Sources</b></p>
<p><b>Public Education:</b> Develop an on-line brochure to educate the public about the dangers of severe storms. Include a link to the MEMA website.</p>	<p>County EMA Director</p>	<p>8 weeks</p>	<p>Continue to educate and inform the public</p>	<p>County Funds</p>
<p><b>Objective: Lessen property damages caused by severe winter storms and the resulting water runoff or erosion.</b></p>				
<p><b>Mitigation Action</b></p>	<p><b>Responsibility</b></p>	<p><b>Time Frame</b></p>	<p><b>Status/Rational if No Action</b></p>	<p><b>Funding Sources</b></p>
<p><b>Upgrade Plans:</b> Where recurring problems can be documented develop plans to upgrade roads, culverts ditches and drainage systems and stabilize eroding banks to make roads safe from winter storms and water runoff.</p>	<p>Municipal officials Sagadahoc County</p>	<p>As identified</p>	<p>Continue to be deferred. Lack of local funds have impeded some towns from taking this step to address recurring problems.</p>	<p>Grants, Local Funds</p>

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<p><b>Grant Applications:</b> Where recurring problems can be documented apply for grants to upgrade roads, culverts, ditches and drainage systems in accordance with plans for making roads safe from winter storms and water runoff.</p>	Municipal officials	As grants funds are identified	Continue to be deferred. Lack of problem documentation has been an obstacle. More towns are beginning to use the Road Tracker to keep track of local expenditures.	Grants, Local Funds
<p><b>Training:</b> Encourage attendance at Roads Scholar training offered by the Maine Department of Transportation.</p>	Municipal officials	As training is available	Some towns have participated in this program. Additional participation is anticipated during the next five years.	Local Funds
<p><b>Tree Trimming:</b> Encourage Central Maine Power municipalities and private road owners to trim trees along power lines and in the road right-of- way to keep the roads open and power on.</p>	County and Local EMA Directors	Annually as tree trimming work is scheduled	New	Local Funds
<b>Objective: Ensure that all emergency facilities have back-up power.</b>				
<b>Mitigation Action</b>	<b>Responsibility</b>	<b>Time Frame</b>	<b>Status/Rational if No Action</b>	<b>Funding Sources</b>
<p><b>Generators:</b> Raise funds or apply for grants for installation of generators at critical facilities such as municipal offices, fire stations, designed shelters and schools.</p>	Municipal Fire Departments, approval via town meetings, County EMA, Local EMA	As grant funds are available	Continue to be deferred due to poor economic conditions.	Grants, Local Funds

**WILDFIRES**

In Sagadahoc County, the most likely damages caused by a wildfire are the loss of life 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 either wooded areas or wildland/urban interface areas. Major wildfires may close commerce, resulting in major losses to local businesses and individuals.

**Goal/Mission Statement:** Reduce loss of life, injury and property damage in Sagadahoc County caused bywildfires.

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<b>Objective: Lessen the loss of life and injuries resulting from wildfires.</b>				
<b>Mitigation Action</b>	<b>Responsibility</b>	<b>Time Frame</b>	<b>Status/Rational if No Action</b>	<b>Funding Sources</b>
<b>Public Education:</b> Educate the public through links on the County EMA website to the Maine Forest Service website about the dangers of forest fires to existing and new structures, particularly during dry conditions or a drought.	County EMA, Municipal Fire Departments	8 weeks	Continue to educate and inform the public	Local Funds
<b>Grant Applications:</b> Apply for grants to improve local fire protection especially forest firefighting vehicles and related equipment	Municipal Fire Departments	Annually	Some local fire departments have applied for grants	Grants
<b>Objective: Lessen property damages caused by wildfires.</b>				
<b>Mitigation Action</b>	<b>Responsibility</b>	<b>Time Frame</b>	<b>Status/Rational if No Action</b>	<b>Funding Sources</b>
<b>Subdivision fire ponds:</b> Require that developers construct fire ponds in new subdivisions located in remote wooded areas, or other high risk areas.	Planning Boards, Town Meeting/City Council	As projects are proposed	Continued to be deferred; lack of significant development activity	Local Funds
<b>Wildfire Pre-planning:</b> Employ steps to mitigate property damage from wildfires such as identifying access point to inland forest areas and to promote timber cutting to lessen fire potential.	County EMA Directors in cooperation with Local EMA Directors and Fire Chiefs	16 weeks	New activity	Local Funds

**Rating of Actions and Establishment of Priorities**

The 2006 Hazard Mitigation Plan did not rate actions or establish priorities. The Sagadahoc County Hazard Mitigation Planning Team in 2011 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: The rating system established in the 2011 plan will be kept in the 2016 plan.

Key to Rating:

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

Key to Priority:

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).

<b>Rating of Flood Mitigation Actions</b>						
	<b>Life Safety</b>	<b>Population Benefited</b>	<b>Probability Community Acceptance</b>	<b>Probability Funding</b>	<b>Feasibility of Implementation</b>	<b>Total Score</b>
<b>1A</b> Contact Lists	3	1	3	3	3	13
<b>2A</b> NFIP Participation	2	2	3	3	3	13
<b>2B</b> Repetitive Loss Properties	3	1	3	1	1	9
<b>2C</b> Ordinance	2	1	3	3	3	12
<b>2D</b> Beaver Dams	1	3	3	1	2	10
<b>2E</b> Improved Maps	3	2	3	1	1	10
<b>3A</b> Problem Documentati	2	3	3	2	2	12
<b>3B</b> Best Practices	2	3	3	1	2	11
<b>3C</b> Grant Applicatio	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
<b>1A</b> Public	3	3	3	3	3	15
<b>1C</b> Functional Needs	2	1	3	3	3	12
<b>2A</b> Public	3	3	2	2	3	13
<b>3A</b> Upgrade Plans	2	3	3	1	2	11
<b>3B</b> Grant Applicatio	2	3	3	1	1	10
<b>3C</b> Training	3	3	3	2	3	14
<b>4A</b> Generators	1	2	1	1	3	8

Rating of Wildfire Mitigation Actions						
	Life Safety	Population Benefited	Probability Community Acceptance	Probability Funding	Feasibility of Implementation	Total Score
<b>1A</b> Public	1	2	3	3	3	12
<b>1B</b> Grant Applicatio	3	1	3	1	3	11
<b>2A</b> Fire Ponds for Subdivisions	1	1	2	3	3	10

**PRIORITIZED MITIGATION PROJECTS**

**Projects Listed in Priority Order**

All of the municipalities in Sagadahoc County identified one or more action items consistent with the County-wide goals, and actions, to mitigate hazards at the local level. The jurisdictions, as well as the specific actions they will pursue, are listed in priority order in the following table (the most important actions are listed first). The time frames shown are based upon the availability of materials and funding.

**Criteria for Prioritization**

The list of local projects was developed separately by each municipality. Local officials did not use formal, written criteria for the identification of local projects. Local officials relied on common sense, local knowledge of the frequency and extent of local damages, local knowledge of which projects

were of the highest priority, based on frequency and severity of damages, local knowledge of 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**

Table 2 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, a benefit/cost analysis will be undertaken.

**Status of Completed, Deleted or Deferred Projects**

Table 2 contains the prioritized list of town projects, including a status column.

**Table 2  
Town Projects and Current Status**

**Hazard Mitigation Projects**

All projects for each municipality are listed in Priority order (The most important items are listed first)

Arrowsic					
Project	Cost	Time Frame	Responsible Agency	Funds	Status
Bald Head Road: Dig-out and build up the under layer in 5 specific sections and then recover with dirt to help with draining	\$250,000	52 weeks	Road Commissioner	Town	Deferred until funding is available
Bath					
Project	Cost	Time Frame	Responsible Agency	Funds	Status
North Bath Road: Upsize 30"x50' culvert & repave	\$15000	2 weeks	Public Works	Town	Completed in 2008
Whiskeag Road: Upsize existing 14' culvert and wingwalls 7 repave. Conduct h&h study	\$125000	10 weeks	Public Works	Town	Completed in 2008
Commercial St. Pump Station: Elevate electric panels and electric motors, hardware for generator connect. Flood proof building	\$35000	4 weeks	Public Works	Town	Completed in 2011
Pleasant St. Pump Station: Elevate electric panels and electric motors. Hardwire for generator connect. Flood proof building	\$35000	4 weeks	Public Works	Town	Completed in 2011
Park Street: Install culvert 72'x6" with storm drain upgrade	\$2000000	16 weeks	Public Works	Town	Completed in 2014

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Harward Street Pump Station: Pipe upgrade and electrical	1200000	12 weeks	Public Works	Town	Completed in 2012
Rose & Hunt Pump Station: Upgrade, elevate electrical equipment, and flood proof building	\$40,000	4 weeks	Public Works	Town	New
Willow Street: Correct on-going flooding, upgrade drainage structures	\$30,000	6 weeks	Public Works	Town	New- Planning Stage
Commercial Street: Correct flooding problem, improve drainage	\$35,000	4 weeks	Public Works	Town	New –Planning Stage
Lower Washington Street: Correct flooding problem, improve drainage	\$40,000	4 weeks	Public Works	Town	New- Planning stage
North Bath Road: Culvert at the Mill Pond is undersized and creates flooding, <b>upsized</b> culvert	\$55,000	6 weeks	Public Works	Town	New

**Bowdoin**

Project	Cost	Time Frame	Responsible Agency	Funds	Status
West Burrough: Culvert Upgrades	\$100,000	3 weeks	Road Commissioner	Town Grant	New- Planning
Dear River Road: Rip rap ditch line road shoulder 500'x 5"	\$7500	2 weeks	Road Commissioner	Town	Completed
Doughty Road, Rip rap ditch line shoulder 550'x5'	\$7500	2 weeks	Road Commissioner	Town	Completed
West Barrough Rd, Rip rap ditch line 200'	\$2500	2 weeks	Road Commissioner	Town	Completed
The Wagg Road at the causeway, culvert needs to be upgraded	\$10000	6 weeks	Road Commissioner	Town	Completed in 2007

**Bowdoinham**

Project	Cost	Time Frame	Responsible Agency	Funds	Status
Abbagadasset Road: New culverts and repaving	TBD	26 weeks	Road Commissioner	Town	Completed in 2015.
Millay Road: New culverts and repaving	TBD	26 weeks	Road Commissioner	Town	Completed in 2013
Fisher Road: Design and install debris catcher for 72: culvert at Shinglemen's Creek	\$15000	2 weeks	Road Commissioner	Town	Deferred until funds are available
12 identified roads for new culvert upgrades and repaving. Backhill St, Browns Point,	\$152700	26 weeks each	Road Commissioner	Town	Deferred until funds are available

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Carding Machine ,Cemetery Rd, Dinsmore Crossing, Pork Pt, Preble Ridge Rd, School St, South pleasant, Spring St, and Wilde Rd.					
There are 5 unpaved roads that need to be paved. Carding machine Rd, Dingley Rd, Blanchard Cross Rd, Nornbeck Rd	\$475000	52 weeks	Road Commissioner	Town	Not FEMA eligible No work completed
Mallon Brook Bridge	\$125700	12 weeks	Road Commissioner	Town	Not completed awaiting funds

**Georgetown**

<b>Project</b>	<b>Cost</b>	<b>Time Frame</b>	<b>Responsible Agency</b>	<b>Funds</b>	<b>Status</b>
Bay Point Road: Elevate 250' x 3'x24'	\$22500	3 weeks	Road Commissioner	Town	Partially completed (culvert & repaving) No additional work completed
Indian Point Road: Elevate 150'x18"x24'	\$12000	3 weeks	Road Commissioner	Town	Partially completed (culvert & repaving) No additional work completed

**Phippsburg**

<b>Project</b>	<b>Cost</b>	<b>Time Frame</b>	<b>Responsible Agency</b>	<b>Funds</b>	<b>Status</b>
Parker Head Rd; Mill Brook to Mill Pond, 6' culvert upgrade with twin 7 ft. culverts at present location	\$173000	6 weeks	Road Commissioner	Town	New
Sam Day Hill Rd/Bailey Rook to Mill brook	\$135000	24 weeks	Road Commissioner	Town	Continue to be Deferred; Sam day Hill road project revised and split into two parts. This part 1. Site visited; need additional traffic count and other information for competitive BCA
Sam Day Hill Road; Parker Head Swamp Brook to Bailey Brook	\$100000	12 weeks	Road Commissioner	Town	Continue to be Deferred; Sam day Hill Road project revised and split into two parts. This is part 2. Site visited; need additional traffic count and other information for competitive BCA
Cranberry Point Road	\$400000	52	Road	Town	Continue to be deferred;

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		weeks	Commissioner		project revised and funding is being sought
Stoney Brook Road: Road flooding over a 1,000 foot section of the roadway, Raise the roadbed	\$225,000	12 weeks	Road Commissioner	Town	New- planning stage
Parker House Road: a flooding drainage problem near the 1774 Inn	\$20,000	4 weeks	Road Commissioner	Town	New

**Richmond**

<b>Project</b>	<b>Cost</b>	<b>Time Frame</b>	<b>Responsible Agency</b>	<b>Funds</b>	<b>Status</b>
Upgrade storm water treatment system	\$1145000	52 weeks	Public Works	Grant	Completed 2007
Pitt Center Road: Upsize existing twin 6;x40' culverts with 12'6'x40' box culvert and riprap	\$63972	6 weeks	Public Works	Town	Completed 2007
Lincoln Street: Install additional 5'x60' culvert and riprap	\$10300	4 weeks	Public Works	Town	Completed 2007
Stable Road: Install additional 5'40' and 3'x40 culverts and riprap	\$24255	4 weeks	Public Works	Town	Completed 2010
Outer Lincoln Street: Install additional 5'x60' culvert, riprap and repave	\$6000	4 weeks	Public Works	Town	Partially completed 2007 culverts & rip only
Weeks Road: (beginning of the Abby Brook) Upsize the culvert, build up the road approx. 2 feet and repave	\$50000	6 weeks	Public Works	Town	Not completed; lack of available funds
Langdon Road: (near Savage Road) upsize culvert, raise road approx. 2 feet in center and repave	\$35000	6 weeks	Public Works	Town	Not completed
Langdon Road: (near Abby Brook) 2 very large box culverts, size to be determined by engineer and riprap and repave road	\$400000	12 weeks	Public Works	Town	Not completed; lack of available funds, etc.
Brown Road: ( near ¾ mile from Alexander /Reed Road heading north), replace metal culverts, size to be determined by engineer and riprap and repave road	\$65000	6 weeks	Public Works	Town	Not completed

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**Topsham**

<b>Project</b>	<b>Cost</b>	<b>Time Frame</b>	<b>Responsible Agency</b>	<b>Funds</b>	<b>Status</b>
Elm Street: Upsize old stone box culvert with 48' x 80' culvert	\$125000	52 weeks	Public Works	Town	Partially completed; still being worked on
Meadow Cross Road: Upsize existing three culverts with 3'x10'x40' box culvert & repave	\$40000	8 weeks	Public Works	Town	Completed in 2011
Bay park Subdivision: (Goldeneye Drive, Hunter lane and Elder lane) storm drain replacement and upgrade. Upgrade existing 8" underdrain system including new pipe, basins and paving. Construction of a new outlet and or upgrade of existing outlet	1.5 million	52 weeks	Public Works	Town	Project is in the planning phase and funding is being explored
Bridge and approaches on the Cathance Rd. location in N43 57.7132, W69 55.8058. reworking needed on the approaches and piers on the banking of the bridge	\$750000	52 weeks	Public Works	Town	Completed in 2014
Pleasant Point Road: A 400 foot section of the road is subject to flooding and needs to be raised	\$75,000	8 weeks	Public Works	Town	New

**Unorganized**

<b>Project</b>	<b>Cost</b>	<b>Time Frame</b>	<b>Responsible Agency</b>	<b>Funds</b>	<b>Status</b>
Upgrade drainage on county-owned roads. Upsize culverts, improve ditching	\$125000	52 weeks	County Public Works	County	Pending due to lack of funding

**West Bath**

<b>Project</b>	<b>Cost</b>	<b>Time Frame</b>	<b>Responsible Agency</b>	<b>Funds</b>	<b>Status</b>
Birch Point Road: Ditch 10,000' Blast 3,000 Cu Yd. install (12) 15' x 40' & (12) 18" x 40' culverts and repave	\$425000	14 weeks	Road Commissioner	Town	Continue to be deferred until funding is available
Mountain Road: Riprap 600' x10'x3', ditching and culverts	\$18000 \$750000	14 weeks	Road Commissioner	Town	Continue to be deferred until funding is available

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Sabino Road: Dig up, geo-mesh installed to prevent any future sinking and then rebuild	\$350000	8 weeks	Road Commissioner	Town	Deferred until funding is available
Sanfords Crossing Road: Ditch, culverts and overlay	\$250000	8 weeks	Road Commissioner	Town	Deferred until funding is available
Hill Road: Rebuild and pave road surface to repair storm water damage.	\$150,000	16 weeks	Road Commissioner	Town	New

**Woolwich**

Project	Cost	Time Frame	Responsible Agency	Funds	Status
George Wright Road: Upsize 12'x50' box culvert & repave	\$65000	6 Weeks	Road Commissioner	Town	Deferred until funding is available
River Road: Elevate 100'x32'x2 upsize 8;x50' box culverts & repave( near knight Drive (Knights Farm) on route 128)	\$40000	5 Weeks	Road Commissioner	Town	Deferred until funding is available
Old state road: (just north of Dana Mill road Intersection ) Elevate 300'x20'x2' replace existing 40'x5' with (2) 50'x4' poly Smooth Flow culvert pipes and repave	\$45000	4 Weeks	Road Commissioner	Town	Deferred until funding is available

**15. Identification and Analysis of Mitigation Actions: National Flood Insurance Program (NFIP) Compliance**

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

<b>Elements</b>	<b>A.</b> Does the new or updated plan describe the jurisdiction's participation in the
	<b>B.</b> Does the mitigation strategy identify, analyze and prioritize actions related to continued compliance with the NFIP?

**A. Participation in the NFIP**

All towns in Sagadahoc County are in the Flood Insurance Program, as shown in the Table below. The effective date is based on the Federal Emergency Management Agency's Community Status Book Report. Please note that Bowdoin has joined the NFIP since publication of the 2011 Hazard Mitigation Plan. All municipalities have adopted the updated FIRM maps in 2015.

<b>Sagadahoc County Communities Participating in the National Flood Insurance Program</b>	
<b>Town</b>	<b>Effective Date</b>
Arrowsic	6/17/15
Bath	5/6/15
Bowdoin	6/29/15
Bowdoinham	7/15/15
Georgetown	6/13/15
Phippsburg	5/5/15
Richmond	6/2/15
Topsham	5/20/15
West Bath	6/17/15
Woolwich	5/13/15

Source: Maine Floodplain Management Program

**B. Actions Related to Continued Compliance with the NFIP**

Actions related to continued compliance with the NFIP are on pages 5-3 and 5-4, specifically:

**2.A. NFIP Participation** – this is the top ranked priority related to the flood insurance program because all communities participate in the program and it is likely that this high rate of participation will continue.

**2.B. Repetitive Loss Properties** – this is the third-ranked priority related to the NFIP. It is ranked third because the prospects for project application and funding are not assured.

**2.C. Ordinance Enforcement** – this is the second-ranked priority related to the NFIP. It is ranked second because effective enforcement of the floodplain management ordinance is critical to continued compliance with the requirements of the NFIP.

**2.E. Improved Maps** – this is the fourth-ranked priority related to the NFIP because prior to 2015 many FIRM maps were obsolete and while there was new LIDAR data for much of the coast, it was not incorporated by FEMA until the revised FIRM maps were updated and finally adopted by each of our municipalities in Sagadahoc County in 2015. The new FIRM maps provide greater detail allow for better use and enforcement of the Floodplain Management Requirements. The Maine Floodplain Program administers the State’s National Flood Insurance Program.

<b>16. Implementation of Mitigation Actions</b>	
<b>Requirement §201.6(c)(3)(iii):</b> (The mitigation strategy section shall include) an action plan describing how the actions identified in section (c)(3)(ii) will be prioritized, implemented and administered at 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.	
<b>Elements</b>	<b>A.</b> Does the new or updated mitigation strategy include (a discussion about) how the actions are prioritized? (For example, is there a discussion of the process and the criteria used?)
	<b>B.</b> Does the new or updated mitigation strategy address how the actions will be implemented and administered, including the responsible department, existing and potential resources and the timeframe to complete each action?
	<b>C.</b> Does the new or updated prioritization process include an emphasis on the use of a cost-benefit review to maximize benefits?
	<b>D.</b> Does the updated plan identify the completed, deleted or deferred mitigations as a benchmark for progress, and if actions are unchanged (i.e., deferred) does the updated plan describe why no changes occurred?

**A. How the Actions are Prioritized (The 2011 action priorities are still in effect)**

**County-wide Actions**

Long-range mitigation actions are important in developing a coherent strategy for mitigating hazards. The county-wide mitigation actions included on pages 5-3 through 5-7 are prioritized on pages 5-8 to 5-9 according to criteria described on page 5-8.

**Town-specific Projects**

Projects shown on pages 5-11 through 5-13, are subject to FEMA requirement #16. However, in a multi-jurisdiction plan involving many municipalities, it is not possible to compare projects across municipal boundaries because very few if any officials will have a detailed understanding of each project and how they compare to those in other communities. The preparation of detailed, cost benefit analyses is a complex, costly process that is beyond the scope and funding that is available to complete this Plan. The preparation of cost benefit analyses is part of the project funding application process and will be undertaken at the time municipalities decide to apply for grants. Instead of a formal process for prioritizing projects, each municipality is asked to prioritize its own projects. See introductory statements to Prioritized Mitigation Projects on page 5-10 for a discussion about how these projects were prioritized.

**B. How the Actions and Projects will be Implemented and Administered**

See county-wide goals, objectives and mitigation actions on pages 5-3 to 5-7 for a summary of who will be responsible for implementation as well as the current status of each action. See Prioritized Mitigation Projects beginning on page 5-11 for a project-by-project summary of costs, timeframe and responsible party.

**C. Use of a Cost-benefit Analysis**

MEMA will utilize the cost benefit analyses prepared by applicants when they apply for mitigation funding.

Many of the jurisdictions included in this Plan are small towns run by volunteers. 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 local budget review process and subsequent public discussion. This review is at least equal to a formal benefit-cost calculation because each expenditure item will be carefully scrutinized rather than simply being plugged into a formula. Nevertheless, MEMA and the County EMA have made it clear to local officials that a cost benefit analysis will have to be prepared in the event they apply to MEMA for mitigation funding.

**D. Benchmarks for Progress**

- See the “Status/Rationale if No Action” column in General Goals, Objectives and Mitigation Actions beginning on page 5-3 of this Plan.
- See the “Status” column in Summary of Hazard Mitigation Projects by Municipality beginning on page 5-11 of this Plan.

<b>17. Multi-Jurisdictional Mitigation Actions</b>	
<b>Requirement §201.6(c)(3)(iv):</b> For multi-jurisdictional plans, there must be identifiable action items specific to the jurisdiction requesting FEMA approval or credit of the plan.	
<b>Elements</b>	<p><b>A.</b> Does the new or updated plan include identifiable action items for each jurisdiction requesting FEMA approval of the plan?</p> <p><b>B.</b> Does the updated plan identify the completed, deleted or deferred mitigation actions as a benchmark for progress, and if activities are unchanged (i.e., deferred), does the updated plan describe why no changes occurred?</p>

**A. Identifiable Action Items Specific to Jurisdictions**

(See pages 5-11 to 5-16)

**B. Status of Mitigation Actions**

(See Pages “Status” column on pages 5-11 to 5-16)