Town of Waldoboro, Maine
Select Board Meeting
Municipal Building – 1600 Atlantic Highway
Tuesday January 11, 2022

1. **Call to Order**

   Select Board Chairman Abden Simmons called the meeting to order at 6:00 p.m. Select Board members present in person were Robert Butler, Will Pratt, Jann Minzy, and Jan Griesenbrock. Town Manager Julie Keizer was also present. A quorum was present throughout. EMS Director Richard Lash, Town Clerk Pam Jameson were present.
   The audience included Jefferson resident Chuck Delory, Brian Elves and Reuben Mahar. Representatives from the Town of Jefferson Pamela Grotton and Jigger Clark were present, and reporter Emily Hayes from the *Lincoln County News*.

2. **Pledge of Allegiance**
3. **Philbrook Foundation**

   On the motion of Griesenbrock/Butler, the Select Board voted unanimously to come out of executive session.
   On the motion of Butler/Minzy, the Select Board voted unanimously to approve applicant #2022-5 for $1520.00.
   On the motion of Butler/Griesenbrock, the Select Board voted unanimously to decline applicant #2022-7.

4. **Presentations – Alewives Davis Trust**

   Chuck Delory and Brian Elves, Representatives of the Alewives Davis Fish Trust, updated the Select Board on the Washington Pond Project. They asked the Select Board to release $500.00 of the funds for the Medomak Brook Connection. This would enable the removal of the LaSal Dam by receiving an easement (which would eventually go to DMR) from Mr. LaSal and allow passage for the alewives into Washington Pond. In conjunction with the DMR (Department of Marine Resources who will eventually fund the entire project), removal of the dam would open up roughly 580 acres becoming the largest body of water in the Watershed. On the motion of Butler/Minzy, the Select Board unanimously voted to release funds as needed for the purpose indicated for the project.

5. **Adjustments to the Agenda – Move Jefferson EMS Discussion to 6**

   On the motion of Butler/Minzy, the Select Board voted unanimously to move the Jefferson EMS Discussion up in the agenda.

6. **Old Business – Jefferson EMS discussion**

   The Select Board welcomed Jefferson Select Board members Jigger Clark and Pam Grotton for a discussion regarding the new EMS contract. Keizer received an email from the town of Jefferson stating that they did not agree/accept the terms they had received regarding the cost of coverage from January 1 through January 14. The Town of Jefferson has a scheduled town meeting on Friday January 14 to vote on the new contract. Grotton said they have been advised not to accept the terms, due to no pricing

included in the terms, and felt it was left open-ended. Grotton further expressed that they felt that the town of Waldoboro could charge them whatever they wanted. EMS director Richard Lash clarified that the charges were dependent on the nature of the call and there was no way of knowing the charge to provide to the town. He also added that if there is a two-ambulance call and all parties involved sign off and do not/refuse transport the town of Waldoboro would not be compensated and the potential income from another transport is lost. Keizer commented that this is where we have an issue. Keizer stated that if the vote on Friday fails the Town of Jefferson would not immediately receive a bill that we would demand payment on, it would take several months to work through the insurance, and we would give you a very detailed bill on what it was. If the vote passes, it will be mute. Butler mentioned that the Waldoboro Select Board was under the impression that Jefferson had budgeted $7000.00 to help cover those costs. Clark remarked the Jefferson Select Board felt some hostility contained in the emails received from Keizer but wants to keep a good relationship between the neighboring towns. Keizer also felt hostility in return and decided that there was much miscommunication on both sides. Keizer and Butler will attend the Jefferson Special Town Meeting on Friday to answer any questions the residents of Jefferson or additional Select Board members may have.

7. Select Board Comments

Butler reminded the public that Tom Schmeelk from the Maine Forestry Service will be at the Town Office for a Brown Tail Moth meeting on February 9, 2022 at 4:30.

Minzy commented that she has been ill for several days and used the Waldoboro EMS Service for an unexpected trip. She was able to talk to a couple of the EMS employees and commented on their experiences here in Waldoboro. Both love their jobs and are happy to be there. They made an unpleasant experience for Minzy better. Thank you.

Pratt wanted to remind residence to be careful of the ice buildup in walkways/driveways and mentioned that they were able to receive up to two 5-gallon buckets of sand at the Public Works Garage. Bring your own bucket and shovel.

8. Town Manager's Report

Keizer expressed that she misses Max Johnstone and all of the help that he is to her. Keizer has been working on the budget and the budget calendar and should have it workable by early next week. Keizer also brought attention to our own Community Navigator Karan-Ann Hagar, Police Chief John Lash and an additional officer who again stepped up and helped an unnoticed elderly resident who was living with no heat. They assisted her and helped her get the help/services that she needed and ultimately saved her life. We have an awesome team!

9. Consent Calendar

On the motion of Griesenbrock/Minzy, the Select Board voted unanimously to approve the consent calendar.

1.1. Approve Meeting Minutes: December 28, 2021

1.2. Financial Warrants & Reports:

1.2.1 Warrants - #25

1.2.2 Waldoboro HRA Operating Warrant – None

1.2.3 Waldoboro Water Department Operating Warrant – None
1.2.4 Revenue and Expense Report – None
1.2.5. Disposition of Records – Schedule #6, & #8

1.3. Correspondence None

1.4. Quitclaim Deed(s)/Discharge(s): None

11. New Business - Inter

11.1. Interstate Septic Systems, INC. Contract Renewal

On the motion of Butler/Griesenbrock, the Select Board voted unanimously to approve the renewal contract for Interstate Septic Systems, Inc. for $2300.00.

12. Agenda items for next meeting

12.1. Jefferson EMS update

13. Adjourn as Select Board

13.1 On the motion of Griesenbrock/Minzy, the Select board unanimously voted to adjourn the meeting at 6:54 P.M.

Select Board
Town of Waldoboro, Maine

_____ _____

Abden Simmons, Chair **Robert Butler**

_____ _____

Jan Griesenbrock, Vice Chair **Joanne C. Minzy**

_____

William Pratt

TOWN OF WALDOBORO

P.O. Box J
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Waldoboro, ME 04572
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PAYROLL WARRANT 26

PAY PERIOD 12/20/2021 – 01/02/2022
PAY DATE 01/07/2022

To the Treasurer:

Pay to each of the persons named in the following warrant the sums set against their respective names, amounting in the aggregate to $147,590.77 and charge the same to the appropriations or account indicated.

APPROVED _____

_____

_____

_____

_____

Payroll Accounting Charges

Pay Date: 01/07/2022

Summary

Description	Account	Debit	Credit
Gross Pay----------			
TOWN MGR - Payroll Comp / Regular Emp	E 120-10-20	8,243.35	
ASSESSMENT - Payroll Comp / Regular Emp	E 150-10-20	4,333.36	
FINANCE - Payroll Comp / Regular Emp	E 200-10-20	7,554.43	
TOWN CLERK - Payroll Comp / Regular Emp	E 205-10-20	2,412.58	
EMERG MED - Payroll Comp / Regular Emp	E 300-10-20	5,880.80	
EMERG MED - Payroll Comp / P-T Emp	E 300-10-30	22,561.25	
EMERG MED - Payroll Comp / Overtime	E 300-10-50	3,291.00	
EMERG MED - Payroll Comp / Holiday	E 300-10-60	603.60	
FIRE - Payroll Comp / P-T Emp	E 320-10-30	1,760.00	
POLICE - Payroll Comp / Regular Emp	E 340-10-20	24,653.21	
POLICE - Payroll Comp / P-T Emp	E 340-10-30	2,303.20	
POLICE - Payroll Comp / Overtime	E 340-10-50	4,177.98	
POLICE - Payroll Comp / Holiday	E 340-10-60	3,061.40	
SHELLFISH - Payroll Comp / P-T Emp	E 350-10-30	756.00	
PUBLIC WORKS - Payroll Comp / Regular Emp	E 500-10-20	25,141.62	
PUBLIC WORKS - Payroll Comp / Overtime	E 500-10-50	7,330.42	
GENL ASSIST - Payroll Comp / Regular Emp	E 600-10-20	284.08	
RECREATION - Payroll Comp / Regular Emp	E 620-10-20	2,927.02	
PLAN & DEV - Payroll Comp / P-T Emp	E 700-10-30	3,642.20	
TRANSFER STA - Payroll Comp / Regular Emp	E 940-10-20	8,913.64	
TRANSFER STA - Payroll Comp / Overtime	E 940-10-50	91.67	
TRANSFER STA - Payroll Comp / Contract	E 940-10-90	4,430.75	
Taxes----------			
Fed Tax W/H	G 10-2021-00		11,897.78
Soc Sec W/H	G 10-2021-00		2,319.36
Medicare W/H	G 10-2021-00		4,155.06
State Tax W/H	G 10-2022-00		5,658.81
Medicare Employer's Match	E 120-15-10	118.28	
Medicare Employer's Match	E 150-15-10	62.80	
Medicare Employer's Match	E 200-15-10	109.96	
Medicare Employer's Match	E 205-15-10	33.76	
Medicare Employer's Match	E 300-15-10	466.36	
Medicare Employer's Match	E 320-15-10	25.49	
Medicare Employer's Match	E 340-15-10	495.61	
Medicare Employer's Match	E 350-15-10	10.59	
Medicare Employer's Match	E 500-15-10	465.79	
Medicare Employer's Match	E 600-15-10	4.12	
Medicare Employer's Match	E 620-15-10	41.88	
Medicare Employer's Match	E 700-15-10	51.14	
Medicare Employer's Match	E 940-15-10	191.75	
FICA Employer's Match	E 300-15-20	1,045.80	
FICA Employer's Match	E 320-15-20	89.30	
FICA Employer's Match	E 340-15-20	24.58	
EIC	G 10-2021-00		0.00
Deductions----------			
REG PENSION	G 10-2023-00		4,325.67
POLICE PENSION	G 10-2023-00		1,771.69
COLONIAL LIFE Post Tax	G 10-2024-00		5.77
Supp Life MEPERS	G 10-2024-00		11.35
IP ABT Pretax	G 10-2025-00		127.88
IPTAX Post Tax	G 10-2025-00		284.76
TOWN TAXES	G 10-2026-00		733.00

Maine Start 457plan	G 10-2027-00		1,120.00
Health Ins Subsidy EE Fee 1.5%	G 10-2028-00		37.29
UNION DUES AFSCME 1458-032	G 10-2032-00		234.00
HEALTH INS PRETAX	G 10-2033-00		1,332.08
VOLUNTARY LIFE	G 10-2034-00		6.23
VISION INS PRETAX	G 10-2035-00		57.36
GARNISHMENT DHHS	G 10-2037-00		170.00
GARNISHMENT MASS	G 10-2037-00		292.50
DENTAL PRETAX	G 10-2038-00		188.30
MPERS UAL 5%	G 10-2039-00		629.51
Paid----------			
Federal Tax W/H	G 10-2021-00	11,897.78	
FICA W/H	G 10-2021-00	2,319.36	
Medicare W/H	G 10-2021-00	4,155.06	
State Tax W/H	G 10-2022-00	5,658.81	
GARNISHMENT DHHS	G 10-2037-00	170.00	
GARNISHMENT MASS	G 10-2037-00	292.50	
Maine Start 457plan	G 10-2027-00	1,120.00	
Due To\From	G 21-1600-10		13,627.81
Due To\From	G 10-1600-21	13,627.81	
01/07/2022 PYDTDF - Cash	G 10-1010-00		137,845.88
	Totals	**186,832.09**	**186,832.09**

Total:	Gross Pay	144,353.56
	Federal Tax W/H	11,897.78
	FICA Tax W/H	1,159.68
	Medicare Tax W/H	2,077.53
	State Tax W/H	5,658.81
	Local Tax W/H	
	Deductions W/H	11,327.39
	Net Pay	112,232.37
	FICA Match	1,159.68
	Medicare Match	2,077.53
	Employer Match	0.00

Warrant 27

Jrnl	Check	Month	Invoice Description	Reference		
Description			Account	Proj	Amount	Encumbrance
01917 ALLEGIANCE TRUCKS						
0462	33833	01	FILTER / OIL		X502011461:01	
FILTER / OIL			E 500-60-40		276.70	0.00
			PUBLIC WORKS - Equip R&M / Gas & Diesel			
				Invoice Total-	**276.70**	
0462	33833	01	FILTER & OIL		X502011471:01	
FILTER & OIL			E 500-60-40		301.11	0.00
			PUBLIC WORKS - Equip R&M / Gas & Diesel			
				Invoice Total-	**301.11**	
0462	33833	01	FILTER & OIL		X502011475:01	
FILTER & OIL			E 500-60-40		270.79	0.00
			PUBLIC WORKS - Equip R&M / Gas & Diesel			
				Invoice Total-	**270.79**	
0462	33833	01	FILTER & OIL		X502011477:01	
FILTER & OIL			E 500-60-40		211.72	0.00
			PUBLIC WORKS - Equip R&M / Gas & Diesel			
				Invoice Total-	**211.72**	
0462	33833	01	FILTER		X502011477:02	
FILTER			E 500-60-40		47.31	0.00
			PUBLIC WORKS - Equip R&M / Gas & Diesel			
				Invoice Total-	**47.31**	
				Vendor Total-	**1,107.63**	
01943 BANKDIRECT CAPITAL FINANCE						
0462	999999	01	POLLUTION BINDER		916800	
POLLUTION BINDER			E 850-30-10		455.49	0.00
			PROPERTY INS - Insurance / Prop & Cas			
				Vendor Total-	**455.49**	
01798 BDS WASTE DISPOSAL INC						
0462	33834	01	90 CAR TIRES @ $3		18804	
90 CAR TIRES @ $3			E 940-85-54		270.00	0.00
			TRANSFER STA - Other Expens / OBW,Tires			
				Vendor Total-	**270.00**	
00212 CENTRAL MAINE POWER COMPANY						
0462	33835	01	179 KWH		35016082428	
179 KWH SIGN			E 250-50-10		16.86	0.00
			MUN BUILDING - Utilities / Electricity			
				Invoice Total-	**16.86**	
0462	33835	01	8106 KWH		35016803773	
8106 KWH TOWN OFFICE			E 250-50-10		397.28	0.00
			MUN BUILDING - Utilities / Electricity			
				Invoice Total-	**397.28**	
0462	33835	01	107 KWH		35012965006	
107 KWH STREETLIGHTS			E 450-50-10		195.08	0.00
			STREET LIGHT - Utilities / Electricity			
				Invoice Total-	**195.08**	
0462	33835	01	2615 KWH		35014030411	
2615 KWH PUBLIC WORKS			E 500-50-10		16.86	0.00
			PUBLIC WORKS - Utilities / Electricity			
				Invoice Total-	**16.86**	
0462	33835	01	8 KWH		35012513509	
8 KWH REC			E 621-50-10		16.86	0.00
			RECREATION - Utilities / Electricity			
				Invoice Total-	**16.86**	

Jrnl	Check	Month	Invoice Description	Reference		
Description			Account	Proj	Amount	Encumbrance
0462	33835	01	131 KWH		35012513509	
131 KWH FSS			E 630-50-10		16.86	0.00
			FRIENDSHIP S - Utilities / Electricity			
				Invoice Total-	**16.86**	
0462	33835	01	464 KWH		35015083229	
464 KWH SCALE HOUSE			E 940-50-10		16.86	0.00
			TRANSFER STA - Utilities / Electricity			
				Invoice Total-	**16.86**	
0462	33835	01	980 KWH		35016857829	
980 KWH TRANSFER STATION			E 940-50-10		21.47	0.00
			TRANSFER STA - Utilities / Electricity			
				Invoice Total-	**21.47**	
				Vendor Total-	**698.13**	
01504 CENTRAL TIRE COMPANY INC						
0462	33836	01	6 TIRES		454147	
6 TIRES			E 300-60-70		1,002.66	0.00
			EMERG MED - Equip R&M / Vehicle Main			
				Vendor Total-	**1,002.66**	
00252 COLONIAL SUPPLEMENTAL INS						
0462	999999	01	DAIGLE/JOHN R		E9314741	
DAIGLE/JOHN R			G 10-2024-00		12.50	0.00
			GENERAL FUND / GROUP INS			
				Vendor Total-	**12.50**	
01430 COMSTAR						
0462	33837	01	$78,866.65 @ 4%		E12312021-81	
$78,866.65@ 4%			R 300-3421		3,194.67	0.00
			EMERG MED - EMS REVENUE			
				Vendor Total-	**3,194.67**	
01725 GROSS, MICHELLE E						
0462	33838	01	DEC CLEANING		3667	
DEC CLEANING			E 250-40-90		997.50	0.00
			MUN BUILDING - Professional / Other			
				Vendor Total-	**997.50**	
01806 GROVE CITY COLLEGE						
0462	33839	01	VANNOY, JANE		251390	***** SEPARATE *****
VANNOY, JANE			E 710-71-10		750.00	0.00
			GENTHNER FUN - Scholarships / Geo Genthner			
				Invoice Total-	**750.00**	
0462	33840	01	GOLDEN, CAROLINE		250999	***** SEPARATE *****
GOLDEN, CAROLINE			E 710-71-10		500.00	0.00
			GENTHNER FUN - Scholarships / Geo Genthner			
				Invoice Total-	**500.00**	
0462	33841	01	VANNOY, ARIE			***** SEPARATE *****
VANNOY, ARIE			E 710-71-10		750.00	0.00
			GENTHNER FUN - Scholarships / Geo Genthner			
				Invoice Total-	**750.00**	
				Vendor Total-	**2,000.00**	
00504 HILLSIDE COLLISION CENTER INC						
0462	33842	01	#220 INSP / RP WINDSHIELD		43803	
#220 INSP / RP WINDSHIELD			E 340-60-70		572.40	0.00
			POLICE - Equip R&M / Vehicle Main			
				Vendor Total-	**572.40**	

Jrnl	Check	Month	Invoice Description	Reference		
Description			Account	Proj	Amount	Encumbrance
01666 KEIZER, JULIE						
0462	33843	01	OCT, NOV, DEC 21 & JAN 22	PHONE REIM		
OCT, NOV, DEC 21 & JAN 22			E 120-50-40		200.00	0.00
			TOWN MGR - Utilities / Phone/WIFI			
				Vendor Total-	**200.00**	
00610 LASH/RICHARD D						
0462	33844	01	REIM			
18 MILES			E 300-20-75		10.53	0.00
			EMERG MED - Operating Ex / Travel			
29 MILES			E 300-20-75		16.97	0.00
			EMERG MED - Operating Ex / Travel			
28 MILES			E 300-20-75		16.38	0.00
			EMERG MED - Operating Ex / Travel			
26 MILES			E 300-20-75		15.21	0.00
			EMERG MED - Operating Ex / Travel			
64 MILES			E 300-20-75		37.44	0.00
			EMERG MED - Operating Ex / Travel			
24 MILES			E 300-20-75		14.04	0.00
			EMERG MED - Operating Ex / Travel			
REIM FOR SIREN MODU			E 300-60-50		325.67	0.00
			EMERG MED - Equip R&M / Radio Maint			
REIM FOR DEF FLUID			E 300-20-65		26.36	0.00
			EMERG MED - Operating Ex / Supplies			
				Vendor Total-	**462.60**	
00640 LINCOLN COUNTY NEWS						
0462	33845	01		P195373		
SPECIAL TWN MEETING 12/14			E 100-20-10		52.50	0.00
			SELECTBOARD - Operating Ex / Advertising			
SPECIAL TWN MEETING 12/14			E 100-20-10		52.50	0.00
			SELECTBOARD - Operating Ex / Advertising			
PARKING BAN			E 200-20-10		35.00	0.00
			FINANCE - Operating Ex / Advertising			
PARKING BAN			E 200-20-10		35.00	0.00
			FINANCE - Operating Ex / Advertising			
DOG LICENSING			E 205-20-10		52.50	0.00
			TOWN CLERK - Operating Ex / Advertising			
DOG LICENSING			E 205-20-10		52.50	0.00
			TOWN CLERK - Operating Ex / Advertising			
				Vendor Total-	**280.00**	
00642 LINCOLN COUNTY REGISTRY OF DEEDS						
0462	33846	01	LEINS/DISCHARGES	DEC 21		
LEINS/DISCHARGES			E 200-20-60		285.00	0.00
			FINANCE - Operating Ex / Rec/Proc Fee			
				Vendor Total-	**285.00**	
00686 MAINE COMMERCIAL TIRE INC						
0462	33847	01	RETREAD 4 TIRES	200342961		
RETREAD 4 TIRES			E 500-60-70		1,325.46	0.00
			PUBLIC WORKS - Equip R&M / Vehicle Main			
				Vendor Total-	**1,325.46**	
00701 MAINE MARITIME ACADEMY						
0462	33848	01	DEPATSY, GABRIELLE	29282		
DEPATSY, GABRIELLE			E 710-71-10		500.00	0.00
			GENTHNER FUN - Scholarships / Geo Genthner			
				Vendor Total-	**500.00**	
00703 MAINE MUNICIPAL ASSOCIATION						

Jrnl	Check	Month	Invoice Description	Reference		
Description			Account	Proj	Amount	Encumbrance
0462	33849	01	1ST INSTALLMENT WC	JAN 2022		
1ST INSTALLMENT WC			E 100-15-30		7.45	0.00
			SELECTBOARD - Emp Benefits / WkrsCompIns			
1ST INSTALLMENT WC			E 120-15-30		82.52	0.00
			TOWN MGR - Emp Benefits / WkrsCompIns			
1ST INSTALLMENT WC			E 150-15-30		389.36	0.00
			ASSESSMENT - Emp Benefits / WkrsCompIns			
1ST INSTALLMENT WC			E 200-15-30		171.27	0.00
			FINANCE - Emp Benefits / WkrsCompIns			
1ST INSTALLMENT WC			E 205-15-30		54.40	0.00
			TOWN CLERK - Emp Benefits / WkrsCompIns			
1ST INSTALLMENT WC			E 300-15-30		10,236.13	0.00
			EMERG MED - Emp Benefits / WkrsCompIns			
1ST INSTALLMENT WC			E 320-15-30		1,917.10	0.00
			FIRE - Emp Benefits / WkrsCompIns			
1ST INSTALLMENT WC			E 340-15-30		4,524.42	0.00
			POLICE - Emp Benefits / WkrsCompIns			
1ST INSTALLMENT WC			E 350-15-30		271.46	0.00
			SHELLFISH - Emp Benefits / WkrsCompIns			
1ST INSTALLMENT WC			E 500-15-30		5,597.58	0.00
			PUBLIC WORKS - Emp Benefits / WkrsCompIns			
1ST INSTALLMENT WC			E 620-15-30		376.68	0.00
			RECREATION - Emp Benefits / WkrsCompIns			
1ST INSTALLMENT WC			E 700-15-30		387.31	0.00
			PLAN & DEV - Emp Benefits / WkrsCompIns			
1ST INSTALLMENT WC			E 940-15-30		876.32	0.00
			TRANSFER STA - Emp Benefits / WkrsCompIns			
				Vendor Total-	**24,892.00**	
00706 MAINE OXY						
0462	33850	01	OXYGEN	36051		
OXYGEN			E 300-20-65		595.95	0.00
			EMERG MED - Operating Ex / Supplies			
				Invoice Total-	**595.95**	
0462	33850	01	OXYGEN	35139		
OXYGEN			E 500-20-65		2,955.60	0.00
			PUBLIC WORKS - Operating Ex / Supplies			
				Invoice Total-	**2,955.60**	
				Vendor Total-	**3,551.55**	
00714 MAINE RECREATION & PARK ASSOC						
0462	33851	01	ANNUAL MEMBERSHIP (MB)	2383		
ANNUAL MEMBERSHIP (MB)			E 620-20-35		45.00	0.00
			RECREATION - Operating Ex / Fees & Dues			
				Vendor Total-	**45.00**	
00731 MAINE WATER						
0462	33852	01	FIRE HYDRANTS	3000405101		
FIRE HYDRANTS			E 400-85-20		7,208.00	0.00
			FIRE HYDRANT - Other Expens / Hydrant Rent			
				Vendor Total-	**7,208.00**	
00826 MCKESSON MEDICAL - SURGICAL						
0462	999999	01	MEDICAL SUPPLIES	18869317		
MEDICAL SUPPLIES			E 500-20-65		208.07	0.00
			PUBLIC WORKS - Operating Ex / Supplies			
				Invoice Total-	**208.07**	
0462	999999	01	MEDICAL SUPPLIES	18869575		
MEDICAL SUPPLIES			E 300-20-65		242.44	0.00
			EMERG MED - Operating Ex / Supplies			

Jrnl	Check	Month	Invoice Description	Reference		
Description			Account	Proj	Amount	Encumbrance
				Invoice Total-	**242.44**	
0462	999999	01	MEDICAL SUPPLIES	18873696		
MEDICAL SUPPLIES			E 300-20-65		154.85	0.00
			EMERG MED - Operating Ex / Supplies			
				Invoice Total-	**154.85**	
0462	999999	01	MEDICAL SUPPLIES	18873967		
MEDICAL SUPPLIES			E 300-20-65		179.02	0.00
			EMERG MED - Operating Ex / Supplies			
				Invoice Total-	**179.02**	
0462	999999	01	MEDICAL SUPPLIES	18875463		
MEDICAL SUPPLIES			E 300-20-65		406.02	0.00
			EMERG MED - Operating Ex / Supplies			
				Invoice Total-	**406.02**	
0462	999999	01	MEDICAL SUPPLIES	18902731		
MEDICAL SUPPLIES			E 300-20-65		398.70	0.00
			EMERG MED - Operating Ex / Supplies			
				Invoice Total-	**398.70**	
0462	999999	01	MEDICAL SUPPLIES	18917674		
MEDICAL SUPPLIES			E 300-20-65		302.05	0.00
			EMERG MED - Operating Ex / Supplies			
				Invoice Total-	**302.05**	
				Vendor Total-	**1,891.15**	
01424 MODERN PEST SERVICES, LLC						
0462	33853	01	PEST CONTROL	5100068		
RODENT CONTROL			E 940-63-20		67.00	0.00
			TRANSFER STA - Building & G / Grounds Main			
				Vendor Total-	**67.00**	
00838 MUNICIPAL REVIEW COMMITTEE						
0462	33854	01	OCT, NOV & DEC 2021 DUES	14974		
OCT, NOV & DEC 2021 DUES			E 940-40-71		1,157.81	0.00
			TRANSFER STA - Professional / Adm/Mang Con			
				Vendor Total-	**1,157.81**	
00954 PITNEY BOWES GLOBAL FINANCIAL SERV (METER)						
0462	33855	01	3MO POSTAGE METER LEASE	3314950073		
3MO POSTAGE METER LEASE			E 200-60-20		234.96	0.00
			FINANCE - Equip R&M / Equip Rental			
				Vendor Total-	**234.96**	
01473 POWER PLAN (NORTRAX INC.)						
0462	33856	01	LOADER OIL/FILTER	9205817		
LOADER OIL/FILTER			E 500-60-70		225.04	0.00
			PUBLIC WORKS - Equip R&M / Vehicle Main			
				Invoice Total-	**225.04**	
0462	33856	01	TRACTOR FLOW CONT	9199695		
TRACTOR FLOW CONT			E 500-60-70		1,626.67	0.00
			PUBLIC WORKS - Equip R&M / Vehicle Main			
				Invoice Total-	**1,626.67**	
				Vendor Total-	**1,851.71**	
01892 R. H. RENY, INC						
0462	33857	01	XMAS FOOD BASKET SUPP	CUS000028091		
XMAS FOOD BASKET SUPP			G 10-2010-73		561.18	0.00
			GENERAL FUND / EMERG FUND			
				Vendor Total-	**561.18**	

Jrnl	Check	Month	Invoice Description	Reference		
Description			Account	Proj	Amount	Encumbrance
01009 RADIO COMMUNICATION MGMT INC						
0462	33858	01	SIREN SPEAKER	91217		
SIREN SPEAKER			E 300-60-50		353.65	0.00
			EMERG MED - Equip R&M / Radio Maint			
			Invoice Total-		**353.65**	
0462	33858	01	RADIO MAINT	91218		
RADIO MAINT			E 300-60-50		1,126.46	0.00
			EMERG MED - Equip R&M / Radio Maint			
			Invoice Total-		**1,126.46**	
0462	33858	01	SPEAKER INSTALL IN SLP QT	91261		
SPEAKER INSTALL IN SLP QT			E 300-60-50		656.85	0.00
			EMERG MED - Equip R&M / Radio Maint			
			Invoice Total-		**656.85**	
0462	33858	01	RADIO INS IN TRUCK & EXCA	91262		
RADIO INS IN TRUCK & EXCA			E 500-20-65		1,331.07	0.00
			PUBLIC WORKS - Operating Ex / Supplies			
			Invoice Total-		**1,331.07**	
			Vendor Total-		**3,468.03**	
01069 RZR COMPANY INC						
0462	33859	01	CLAMPS	198659		
CLAMPS			E 300-20-65		2.66	0.00
			EMERG MED - Operating Ex / Supplies			
			Invoice Total-		**2.66**	
0462	33859	01	SCREWS	198406		
SCREWS			E 350-20-65		8.99	0.00
			SHELLFISH - Operating Ex / Supplies			
			Invoice Total-		**8.99**	
0462	33859	01	BULBS	198395		
BULBS			E 500-20-65		17.36	0.00
			PUBLIC WORKS - Operating Ex / Supplies			
			Invoice Total-		**17.36**	
0462	33859	01	WHELLBARROW	198514		
WHELLBARROW			E 500-20-65		139.99	0.00
			PUBLIC WORKS - Operating Ex / Supplies			
			Invoice Total-		**139.99**	
0462	33859	01	ICE RINK SUPPLIES	198681		
ICE RINK SUPPLIES			E 621-20-65		70.14	0.00
			RECREATION - Operating Ex / Supplies			
			Invoice Total-		**70.14**	
0462	33859	01	ANTIFREEZE	198440		
ANTIFREEZE			E 630-20-65		42.96	0.00
			FRIENDSHIP S - Operating Ex / Supplies			
			Invoice Total-		**42.96**	
0462	33859	01	PUTTY KNIFE & FLEX GLUE	1988142		
PUTTY KNIFE & FLEX GLUE			E 940-20-65		28.77	0.00
			TRANSFER STA - Operating Ex / Supplies			
			Invoice Total-		**28.77**	
0462	33859	01	SCRAPER FOR TRAILER	198805		
SCRAPER FOR TRAILER			E 940-20-65		66.55	0.00
			TRANSFER STA - Operating Ex / Supplies			
			Invoice Total-		**66.55**	
			Vendor Total-		**377.42**	
01084 SANTHESON/ANDREW						

Jrnl	Check	Month	Invoice Description	Reference		
Description			Account	Proj	Amount	Encumbrance
0462	33860	01	REIM FOR GAS TO AUGUSTA			
REIM FOR GAS TO AUGUSTA			E 340-60-40		52.77	0.00
			POLICE - Equip R&M / Gas & Diesel			
				Vendor Total-	**52.77**	
01102 SECRETARY OF STATE, BMV						
0462	33830	01	12/21/2021-12/29/2021	15160		
12/21/2021-12/29/2021			G 10-2010-05		5,019.00	0.00
			GENERAL FUND / BMV REGISTRA			
				Invoice Total-	**5,019.00**	
0462	33832	01	12/29/2021-01/05/2022	15160		
12/29/2021-01/05/2022			G 10-2010-05		4,935.50	0.00
			GENERAL FUND / BMV REGISTRA			
				Invoice Total-	**4,935.50**	
				Vendor Total-	**9,954.50**	
01973 STAPLES FUNERAL HOME AND CREMATION CARE						
0462	33861	01	FUNERAL EXP (GN)			
FUNERAL EXP (GN)			E 600-80-45		1,025.00	0.00
			GENL ASSIST - GA Services / Funerals			
				Vendor Total-	**1,025.00**	
01183 STORER LUMBER						
0462	33862	01	DRAIN PIPE FOR SKT RINK	K34360		
DRAIN PIPE FOR SKT RINK			E 500-20-65		160.16	0.00
			PUBLIC WORKS - Operating Ex / Supplies			
				Vendor Total-	**160.16**	
01723 SUNNY SUNDOG, LLC						
0462	33863	01		01/03/2022		
50% of total invoice			E 250-50-10		1,511.83	0.00
			MUN BUILDING - Utilities / Electricity			
20% of total invoice			E 500-50-10		604.73	0.00
			PUBLIC WORKS - Utilities / Electricity			
15% of total invoice			E 940-50-10		453.55	0.00
			TRANSFER STA - Utilities / Electricity			
15% of total invoice			E 630-50-10		453.55	0.00
			FRIENDSHIP S - Utilities / Electricity			
				Vendor Total-	**3,023.66**	
01728 SYNCB/AMAZON						
0462	33864	01		ENDS IN0650263		
YELLOW LABELS			E 200-20-65		39.99	0.00
			FINANCE - Operating Ex / Supplies			
POSTCARDS FOR THANK YOU			E 200-20-65		9.95	0.00
			FINANCE - Operating Ex / Supplies			
CONF ROOM RECORDING SUP			E 200-20-65		81.88	0.00
			FINANCE - Operating Ex / Supplies			
WALL MOUNT BROCH HOLDER			E 200-20-65		6.18	0.00
			FINANCE - Operating Ex / Supplies			
WALL CALENDAR			E 300-20-65		14.38	0.00
			EMERG MED - Operating Ex / Supplies			
BADGE CLIPS			E 300-20-65		19.99	0.00
			EMERG MED - Operating Ex / Supplies			
MOUNT IT CUP HOLDER			E 320-20-65		77.99	0.00
			FIRE - Operating Ex / Supplies			
POSTCARDS BUGTUSSLE OPEN			E 350-20-65		44.84	0.00
			SHELLFISH - Operating Ex / Supplies			
FINANCE CHARGES			E 200-20-65		0.12	0.00
			FINANCE - Operating Ex / Supplies			

Jrnl	Check	Month	Invoice Description	Reference		
Description			Account	Proj	Amount	Encumbrance
				Vendor Total-	**295.32**	
01884 TELEFLEX LLC						
0462	33865	01	MEDICAL SUPPLIES		9504857272	
MEDICAL SUPPLIES			E 300-20-65		557.75	0.00
			EMERG MED - Operating Ex / Supplies			
				Vendor Total-	**557.75**	
01264 TREASURER RSU 40						
0462	999999	01	JAN 22 SCHOOL ASSESSMENT			
JAN 22 SCHOOL ASSESSMENT			E 865-35-65		497,803.42	0.00
			RSU 40 - Finance / RSU 40			
				Vendor Total-	**497,803.42**	
01270 TREASURER STATE OF MAINE						
0462	33866	01	40 M/F, 180 N/S		DEC 2021	
40 M/F, 180 N/S			G 10-2010-06		940.00	0.00
			GENERAL FUND / ANIMAL WELFA			
				Vendor Total-	**940.00**	
01266 TREASURER STATE OF MAINE, IFW						
0462	33831	01			123040	
LICENSES			G 10-2010-01		3,671.75	0.00
			GENERAL FUND / IF&W LICENSE			
REGISTRATIONS			G 10-2010-04		1,439.50	0.00
			GENERAL FUND / IF&W REGISTR			
				Vendor Total-	**5,111.25**	
01963 TREASURER, STATE OF MAINE						
0462	33867	01	GILBERT DEC 21			
MONTHLY RET HEALTH INS			G 10-2028-00		66.08	0.00
			GENERAL FUND / HEALTH RETIR			
				Vendor Total-	**66.08**	
01703 US BANK EQUIPMENT FINANCE						
0462	33868	01	1 MONTH COPIER LEASE		461024200	
1 MONTH COPIER LEASE			E 200-60-20		80.85	0.00
			FINANCE - Equip R&M / Equip Rental			
				Vendor Total-	**80.85**	
01599 VERIZON WIRELESS						
0462	33869	01	4 WIFI CONNECTIONS		9895734144	
4 WIFI CONNECTIONS			E 340-50-40		160.54	0.00
			POLICE - Utilities / Phone/WIFI			
				Vendor Total-	**160.54**	
01346 WALDOBORO PUBLIC LIBRARY						
0462	999999	01	JAN 2022			
JAN 2022			E 640-90-85		6,250.00	0.00
			COMM SERV AG - Contribution / Public Libra			
				Vendor Total-	**6,250.00**	
01915 WEX BANK						
0462	999999	01			77298798	
70.12G @ 2.959			E 320-60-40		207.46	0.00
			FIRE - Equip R&M / Gas & Diesel			
576.24G @ $2.910			E 340-60-40		1,676.90	0.00
			POLICE - Equip R&M / Gas & Diesel			
61.62G @ $2.907			E 350-60-40		179.10	0.00
			SHELLFISH - Equip R&M / Gas & Diesel			
				Vendor Total-	**2,063.46**	

Warrant 27

Jrnl	Check	Month	Invoice Description	Reference		
Description			Account	Proj	Amount	Encumbrance
01363 WM CORPORATE SERVICES, INC						
0462	999999	01	12.2T @ $74.28		0056207-2128-1	
12.2T @ $74.28			E 940-85-50		906.21	0.00
			TRANSFER STA - Other Expens / Tipping Fees			
				Vendor Total-	**906.21**	
				Prepaid Total-	**524,447.98**	
				Current Total-	**62,672.84**	
				EFT Total-	**0.00**	
				Warrant Total-	**587,120.82**	

TO THE TREASURER:
PAY TO EACH OF THE PERSONS NAMED IN THE ABOVE WARRANT, ACCOMPANYING SCHEDULES OF BILLS PAYABLE THE SUMS SET AGAINST THEIR RESPECTIVE NAMES, AMOUNTING IN THE AGGREGATE TO THE WARRANT TOTAL ABOVE AND CHARGE THE SAME TO THE APPROPRIATIONS OR ACCOUNT INDICATED.

APPROVED _____ _____
_____ _____
_____ _____

TOWN OF WALDOBORO

P.O. Box J
1600 Atlantic Highway
Waldoboro, ME 04572
Phone: (207) 832-5369 Fax: (207) 832-6061
www.waldoboromaine.org

PAYROLL WARRANT 28

PAY PERIOD 01/03/2022 – 01/16/2022
PAY DATE 01/21/2022

To the Treasurer:

Pay to each of the persons named in the following warrant the sums set against their respective names, amounting in the aggregate to $101,625.03 and charge the same to the appropriations or account indicated.

APPROVED _____

_____

_____

_____

_____

Payroll Accounting Charges

Pay Date: 01/21/2022

Summary

Description	Account	Debit	Credit
Gross Pay----------			
TOWN MGR - Payroll Comp / Regular Emp	E 120-10-20	4,165.60	
ASSESSMENT - Payroll Comp / Regular Emp	E 150-10-20	2,272.64	
FINANCE - Payroll Comp / Regular Emp	E 200-10-20	4,182.96	
TOWN CLERK - Payroll Comp / Regular Emp	E 205-10-20	1,368.00	
EMERG MED - Payroll Comp / Officials Co	E 300-10-10	322.91	
EMERG MED - Payroll Comp / Regular Emp	E 300-10-20	6,254.40	
EMERG MED - Payroll Comp / P-T Emp	E 300-10-30	24,594.68	
EMERG MED - Payroll Comp / Overtime	E 300-10-50	2,310.00	
FIRE - Payroll Comp / Officials Co	E 320-10-10	480.92	
FIRE - Payroll Comp / P-T Emp	E 320-10-30	2,560.00	
POLICE - Payroll Comp / Regular Emp	E 340-10-20	14,666.64	
POLICE - Payroll Comp / P-T Emp	E 340-10-30	1,644.00	
POLICE - Payroll Comp / Overtime	E 340-10-50	2,856.87	
SHELLFISH - Payroll Comp / P-T Emp	E 350-10-30	336.00	
EMA - Payroll Comp / Regular Emp	E 380-10-20	429.17	
PUBLIC WORKS - Payroll Comp / Regular Emp	E 500-10-20	12,713.84	
PUBLIC WORKS - Payroll Comp / Overtime	E 500-10-50	3,546.24	
GENL ASSIST - Payroll Comp / Regular Emp	E 600-10-20	284.08	
RECREATION - Payroll Comp / Regular Emp	E 620-10-20	1,620.72	
PLAN & DEV - Payroll Comp / P-T Emp	E 700-10-30	2,016.72	
TRANSFER STA - Payroll Comp / Regular Emp	E 940-10-20	5,630.00	
TRANSFER STA - Payroll Comp / Overtime	E 940-10-50	366.66	
TRANSFER STA - Payroll Comp / Contract	E 940-10-90	4,036.96	
Taxes----------			
Fed Tax W/H	G 10-2021-00		7,503.52
Soc Sec W/H	G 10-2021-00		3,116.86
Medicare W/H	G 10-2021-00		2,813.18
State Tax W/H	G 10-2022-00		3,746.75
Medicare Employer's Match	E 120-15-10	59.15	
Medicare Employer's Match	E 150-15-10	32.93	
Medicare Employer's Match	E 200-15-10	58.85	
Medicare Employer's Match	E 205-15-10	18.61	
Medicare Employer's Match	E 300-15-10	481.97	
Medicare Employer's Match	E 320-15-10	44.05	
Medicare Employer's Match	E 340-15-10	272.67	
Medicare Employer's Match	E 350-15-10	4.62	
Medicare Employer's Match	E 380-15-10	6.22	
Medicare Employer's Match	E 500-15-10	231.39	
Medicare Employer's Match	E 600-15-10	4.11	
Medicare Employer's Match	E 620-15-10	22.94	
Medicare Employer's Match	E 700-15-10	27.57	
Medicare Employer's Match	E 940-15-10	141.51	
FICA Employer's Match	E 300-15-20	1,363.63	
FICA Employer's Match	E 320-15-20	168.19	
FICA Employer's Match	E 380-15-20	26.61	
EIC	G 10-2021-00		0.00
Deductions----------			
REG PENSION	G 10-2023-00		3,850.13
POLICE PENSION	G 10-2023-00		1,450.38
COLONIAL LIFE Post Tax	G 10-2024-00		5.77
Supp Life MEPERS	G 10-2024-00		11.35
IP ABT Pretax	G 10-2025-00		127.88

IPTAX Post Tax	G 10-2025-00		284.76
TOWN TAXES	G 10-2026-00		843.00
Maine Start 457plan	G 10-2027-00		1,120.00
Health Ins Subsidy EE Fee 1.5%	G 10-2028-00		29.92
UNION DUES AFSCME 1458-032	G 10-2032-00		234.00
HEALTH INS PRETAX	G 10-2033-00		1,370.72
VOLUNTARY LIFE	G 10-2034-00		6.23
VISION INS PRETAX	G 10-2035-00		60.29
GARNISHMENT DHHS	G 10-2037-00		170.00
GARNISHMENT MASS	G 10-2037-00		292.50
DENTAL PRETAX	G 10-2038-00		234.69
MPERS UAL 5%	G 10-2039-00		141.82
Paid----------			
Federal Tax W/H	G 10-2021-00	7,503.52	
FICA W/H	G 10-2021-00	3,116.86	
Medicare W/H	G 10-2021-00	2,813.18	
State Tax W/H	G 10-2022-00	3,746.75	
GARNISHMENT DHHS	G 10-2037-00	170.00	
GARNISHMENT MASS	G 10-2037-00	292.50	
Maine Start 457plan	G 10-2027-00	1,120.00	
Due To\From	G 21-1600-10		10,175.13
Due To\From	G 10-1600-21	10,175.13	
01/21/2022 PYDTDF - Cash	G 10-1010-00		92,974.09
Totals		**130,562.97**	**130,562.97**

Total:	Gross Pay	98,660.01
	Federal Tax W/H	7,503.52
	FICA Tax W/H	1,558.43
	Medicare Tax W/H	1,406.59
	State Tax W/H	3,746.75
	Local Tax W/H	
	Deductions W/H	10,233.44
	Net Pay	74,211.28
	FICA Match	1,558.43
	Medicare Match	1,406.59
	Employer Match	0.00

Lincoln County Hazard Mitigation Plan Update 2021

PREPARED FOR THE FEDERAL EMERGENCY MANAGEMENT AGENCY ON BEHALF OF LINCOLN COUNTY, MAINE.

Lincoln County Emergency Management Agency
207-882-7559 | 32 HIGH STREET, WISCASSET, MAINE 04578

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INTRODUCTION

Lincoln County is along the midcoast region of the state of Maine. It is a rural area made up of coastal towns and historical fishing villages, as well as inland towns along forested rivers.

The County contains 699.81 square miles, 65% land surface (455.82 square miles[1]) and 35% water, with a 2020 population estimate of 34,775[2]. This results in a population density of 76.29 people per square mile. There are no U.S. Census designated Metropolitan areas in the County.

Government

The County government contains the County Sheriff's Department and County Jail, County Clerk's Office, County Treasurer's Office, Registrar of Deeds, Probate Judge, Assistant District Attorney, Emergency Management Office, and the Lincoln County Regional Planning Commission. The municipalities are responsible for other aspects of governance, and depending on their size will have their own police departments.

There are eighteen incorporated towns in Lincoln County. Towns remain the cornerstone of local government. A Maine community becomes a town when it is incorporated by a special act of the 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.

There is one organized plantation in Lincoln County – Monhegan Island. Plantations are a type of local government unique to Maine. 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. The Land Use Planning Commission governs plantations.

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[1] 'Land Area in Square Miles, 2010.' U.S. Census QuickFacts. Retrieved June 16, 2021 from https://www.census.gov/quickfacts/fact/table/lincolncountymaine/

[2] Annual Resident Population Estimates, Estimated Components of Resident Population Change, and Rates of the Components of Resident Population Change for States and Counties: April 1, 2010 to July 1, 2020 (CO-EST2020-alldata)

There are two Unorganized Territories (UT) in Lincoln County, Hibbert's Gore, and Lincoln County Islands. The most prominent of the Lincoln County Island is Louds Island. The Land Use Planning Commission governs Unorganized Territories. Below is the full list[3] of UTs in Lincoln County, and Hibbert's Gore and Louds Island are included in tables where applicable.

- Bar Island
- Haddock Island
- Hibberts Gore, Township of
- Hungry Island
- Indian Island
- Jones Garden Island
- Killick Stone Island
- Louds Island
- Marsh Island
- Polins Ledges Island
- Ross Island
- Thief Island
- Thrumcap Island
- Webber Dry Ledge Island
- Western Egg Rock Island
- Wreck Island
- Wreck Island Ledge

Population

Due to delays in the publication of the 2020 U.S. Census, at the time of LCHMP development, the best-available population and demographic data were sourced from The 5-year 2019 American Community Survey.

Town	Population Estimate, 2019[4]	Census population from 2008[5]	Population projected 2023[4]	Population projected 2033[4]
Alna	734	714	751	779
Boothbay	3,173	3,131	3,192	3,251

[3] Retrieved from FEMA Flood Insurance Study, study number 23015CV000A. Effective 07/16/2015

[4] Subcounty Resident Population Estimates: April 1, 2010 to July 1, 2019 (SUB-EST2019)

[5] Population projections from the Maine State Economist. Retrieved August 26, 2021 fromhttps://www.maine.gov/dafs/economist/sites/maine.gov.dafs.economist/files/inline-files/MaineCityTownPopulationProjections2038.xlsx

Boothbay Harbor	2,213	2,224	2,251	2,307
Bremen	807	813	815	825
Bristol	2,787	2,772	2,840	2,922
Damariscotta	2,151	2,219	2,170	2,150
Dresden	1,678	1,687	1,689	1,699
Edgecomb	1,262	1,239	1,277	1,300
Hibberts gore UT	1	*	*	*
Jefferson	2,455	2,450	2,479	2,540
Louds Island; Lincoln County Islands UT	0	*	*	*
Monhegan Plantation	68	71	70	72
Newcastle	1,767	1,775	1,790	1,824
Nobleboro	1,653	1,656	1,672	1,706
Somerville	565	549	569	573
South Bristol	878	905	880	871
Southport	600	629	605	609
Waldoboro	5,069	5,116	5,121	5,171
Westport Island	730	733	740	756
Whitefield	2,280	2,326	2,275	2,261
Wiscasset	3,763	3,758	3,762	3,800

**Locations with fewer than 5 people in all three observation years have been removed from the final projections. Totals may not equal county totals.*

Changes in the 2021 Lincoln County Hazard Mitigation Plan Update

- The 2021 LCHMP includes a change in formatting. The new formatting closely follows the Elements, and uses those sections as a guide for the subsections within the plan. This plan also includes updated population data, the inclusion of a Table of Contents, and an Introduction section with details on Lincoln County demographics and government. Updates for each Element will be summarized in the respective sections.

- Two new natural disasters were added to the 2021 update; "Drought' and "Pandemic." They are referenced and explained throughout the plan update document.

- The addition of the Unorganized Territories Louds Island, and Lincoln County Islands, were added where applicable.

ELEMENT A – PLANNING PROCESS

- A1. Does the Plan document the planning process, including how it was prepared and who was involved in the process for each jurisdiction? (Requirement §201.6(c)(1))
- 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? (Requirement §201.6(b)(2))
- A3. Does the Plan document how the public was involved in the planning process during the drafting stage? (Requirement §201.G(b)(l))
- A4. Does the Plan describe the review and incorporation of existing plans, studies, reports, and technical information? (Requirement §201.6(b)(3))
- A5. Is there discussion of how the community(ies) will continue public participation in the plan maintenance process? (Requirement §201.6(c)(4)(iii))
- 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)? (Requirement §201.6(c)(4)(1))

Updates from 2016 Plan in this section:

- This section has been updated to include notes about changes and considerations due to the COVID-19 Pandemic and public health emergency of 2020/2021, such as virtual meetings and the changing priorities for town officials
- The 2021 Planning Team implemented an online survey for all residents and the public to participate in, which was not undertaken in the 2016 update
- The Survey Feedback Form was updated to include questions on County-wide actions and susceptible areas, rather than just for specific towns only
- Additional language was added to the planning process to document the many Team meetings held to developing a process and checking in to ensure effective progress
- The Planning Team included a 2-week public comment period prior to FEMA submission for members of the public to review the full plan and submit comments
- Some minor language edits

A1: Does the Plan document the planning process, including how it was prepared and who was involved in the process for each jurisdiction

A3: Does the Plan document how the public was involved in the planning process during the drafting stage?

Throughout this Plan, the terms "community" and "jurisdiction" are used interchangeably. Either word is understood to include towns and plantations within Lincoln County.

The Lincoln County Hazard Mitigation Plan update was a multi-jurisdictional collaborative effort. The Hazard Mitigation Planning Team sought participation from jurisdictions through surveys, meetings, postings on the Lincoln County EMA and RPC website, emails, social media, and phone calls. The COVID-19 pandemic public health crisis of 2020-2021 limited the ability of in-person meetings. It also affected the ability of municipalities to strongly connect with the process as they were focusing elsewhere on immediate needs to support residents.

The planning team relied on the use of virtual meetings and online surveys for input. Municipal EMA officials as well as public works and other relevant staff and professionals were consulted to give feedback on county-wide and town specific actions to mitigate local hazards, and the vulnerability of individuals and susceptibility of local areas to natural disasters. Municipal officials were asked to update mitigation projects from the 2016 plan and outline new projects for the 2021 update.

Additional participation was solicited through phone and email correspondence and a public-facing survey for residents to give input on the areas susceptible to hazards and types of actions the county or town could take.

Additionally, the Planning Team opened a 2-week public comment period prior to FEMA submission of the plan. The public comment period was announced at the September 21st, 2021 Lincoln County Commissioners meeting, and was advertised on the Lincoln County Emergency Management Agency's website, the LCRPC's website and social media, and a press release local newspapers. Any received comments were addressed prior to submission to FEMA.

Prior to solicitation of input from municipalities, members of the planning team met to discuss the scope of the project, which department within Lincoln County government was best suited to lead the update of the 2016 plan, and outline the update process.

The full Planning Team provided expertise, data, and assistance in updating the plan, and solicited outside participation of experts on specific questions. The Hazard Mitigation Planning Team consisted of:

Lincoln County Planning Team	
Casey Stevens	Director, Lincoln County Emergency Management Agency
Anne Fuchs	Director of Mitigation, Planning, and Recovery / State Hazard Mitigation Officer, Maine Emergency Management Agency
Mary Ellen Barnes	Executive Director, Lincoln County Regional Planning Commission
Sandy Gilbreath	Strategic Projects Manager, Lincoln County Regional Planning Commission
Emily Rabbe	County Planner, Lincoln County Regional Planning Commission

Steps within the Update Process

1. Preliminary Planning Meetings, multiple dates.

The Hazard Mitigation Planning Team met multiple times prior and during Plan development for various durations and meeting outcomes. These meetings determined committee roles, timelines, and specific questions and points of clarification. Below are the Planning Team as well as others who were consulted with on the Plan development. Meetings were held with multiple different configurations of attendees.

Preliminary Planning Meetings *Dates: Multiple.*	
NAME	TITLE
Casey Stevens	Director, Lincoln County Emergency Management Agency
Anne Fuchs	Director of Mitigation, Planning, and Recovery / State Hazard Mitigation Officer, Maine Emergency Management Agency
Mary Ellen Barnes	Executive Director, Lincoln County Regional Planning Commission
Sandy Gilbreath	Strategic Projects Manager, Lincoln County Regional Planning Commission

Emily Rabbe	County Planner, Lincoln County Regional Planning Commission
Samuel Roy	Natural Hazards Planner (Mitigation Planning), MEMA
Heather Dumais	State Hazard Mitigation Officer (Mitigation Grants), MEMA
Melissa Temple	Lincoln County Emergency Management Agency, deputy director

2. First Public Meeting. Lincoln County EMA Director's Meeting, and invited public. January 21, 2021

During this meeting, municipal and plantation EMA directors, and interested members of the public gathered to hear a presentation from MEMA and the LCRPC on the Hazard Mitigation Plan update process. The survey instrument and information sheets were introduced, and questions were taken on how best the officials can complete them. An agenda for this meeting can be found in Appendix A.

Attending		
NAME	**TOWN**	**TITLE**
Planning Team		
Anne Fuchs	State of Maine	MEMA Director, Mitigation, Planning, and Recovery
Casey Stevens	Lincoln County	Director, Lincoln County Emergency Management Association
Sandy Gilbreath	Lincoln County	Lincoln County Community Development Specialist
Emily Rabbe	Lincoln County	Lincoln County Planner
Invited Public and Emergency Management Personnel		
Bill Witzell	Edgecomb	EMA Director; Fire Dept.
Bruce Johnston	Bremen	EMA Director; Fire Dept.
Chris Cossette	Wiscasset	Water District Superintendent
Chris Hall	Bristol	Town Administrator
Chris Higgins	Boothbay Harbor	Sewer District Superintendent
Dave Cody	Boothbay, Boothbay Harbor, Southport	EMA Director
Gaye Wagner	Westport Island	EMA Deputy Director
Gunner Gundersen	South Bristol	EMA Director
Jessica Stevens	Monhegan Island Plantation	EMA Director; Fire Dept.
Jim Grenier	Somerville	EMA Director; Fire Dept.

Jim Kaler	Newcastle	EMA Director; Fire Dept.
Ken Desmond	Lincoln County	County EMA Training and Operations Specialist
Kyle Santheson	Waldoboro	EMA Director
Mal Carey	Newcastle	Resident; Executive Committee member of LCRPC
Marianne Pinkham	Nobleboro	Planning Board member; Executive Committee member of LCRPC
Matt Lutkus	Damariscotta	Town Manager
Melissa Temple	Lincoln County	County EMA Deputy Director
Paul Leeman	Bristol	EMA Director; Fire Chief
Peter Gabbe	Nobleboro	Planning Board member
Richard Powell	Nobleboro	Selectman
Rob Bickford	Wiscasset	EMA Director; Fire Chief
Roger Higgins	Westport Island	EMA Director
Tom McKenzie	Alna	EMA Director

2. **Follow-up Meeting**. Lincoln County EMA Director's Meeting. April 1, 2021

During this regularly scheduled municipal and plantation EMA director's meeting, the LCRPC gave an update of the planning process to attendees and encouraged those who had not completed the plan materials to do so as soon as possible. Questions were taken on specific aspects of the process that officials were having difficulty completing.

Attending		
NAME	TOWN	TITLE
Planning Team		
Casey Stevens	Lincoln County	Director, Lincoln County Emergency Management Association
Sandy Gilbreath	Lincoln County	Lincoln County Community Development Specialist
Emily Rabbe	Lincoln County	Lincoln County Planner
Invited Emergency Management Personnel		
Bill Witzell	Edgecomb	EMA Director; Fire Dept.
Bruce Johnston	Bremen	EMA Director; Fire Dept.

Dave Cody	Boothbay, Boothbay Harbor, Southport	EMA Director
Gaye Wagner	Westport Island	EMA Deputy Director
Gunner Gundersen	South Bristol	EMA Director
Jessica Stevens	Monhegan Island Plantation	EMA Director; Fire Dept.
Paul Leeman	Bristol	EMA Director; Fire Chief
Roger Higgins	Westport Island	EMA Director

3. Municipal Feedback Forms: In January of 2021, the Planning Team distributed two Municipal Feedback Forms to EMA directors and other town officials with hazard mitigation information (Code Enforcement Officers, Water District Directors, Road Commissioners, Town Managers, etc.). The documents were 1). A survey to municipalities and stakeholders asking about specific areas susceptible to natural disasters or other concerns they might have in their community, and 2). A 'Mitigation Actions' sheet documenting specific actions that can be taken to mitigate the effects of natural disasters. The survey also asked towns to provide input on actions the County and their towns could undertake for improved hazard mitigation such as local plans or regulations; structure/infrastructure projects; natural systems protection; or education and awareness programs. The 'Mitigation Actions' sheet included the infrastructure projects for each town from the 2016 Lincoln County Hazard Mitigation Plan. Towns were asked to provide updates on the status of those lists, as well as list new projects and actions. Not all towns provided new projects. Examples of these Municipal Feedback Forms can be found in Appendix B.

4. Public Hazard Mitigation Survey: In April of 2021, the Planning Team administered a online survey for residents and the general public. The Team requested input from all stakeholders within Lincoln County about specific areas susceptible to natural disasters, projects that would be useful to mitigate their affects, and concerns they might have in their community regarding vulnerable populations susceptible to natural disasters. Survey responses were used to inform hazard profiles and vulnerability assessments for Element B as well as mitigation actions listed in Element C4. A copy of this survey can be found in Appendix C.

5. Public Comment Period: The LCHMP planning team announced on September 21, 2021 at the Lincoln County Commissioner's meeting that a public comment period was opening. The period was for two (2) weeks until October 5, 2021. The County Commissioners asked various questions on the plan's use and development process, which LCRPC staff, LCEMA staff, and Sam Roy of the Maine Emergency Management Association answered. Local newspapers, who also reported out about the public comment period, and in a press released submitted by LCRPC staff, cover the Lincoln County Commissioner's meetings. Only one (1) response to the Public Comment was received, and relevant information to the LCHMP was incorporated into the risk assessment in Element B.

Summary of Local Participation:

Towns Participating in Municipal Feedback Forms		
NAME	**TOWN**	**TITLE**
Thomas McKenzie	Alna	Code Enforcement Officer
Dan Bryer	Boothbay	Town Manager
Chris Higgins	Boothbay Harbor Sewer District	Superintendent
Henry Nevins	Bremen	Selectman
Chris Hall	Bristol	Town Administrator
Steve O'Bryan	Damariscotta	Civil Emergency Director
William Witzell	Edgecomb	EMA Director
Lynne Barnikow	Jefferson	Administrator
Jessica Stevens	Monhegan Plantation	EMA Director
Seth Hagar	Newcastle	Road Commissioner
Richard Powell	Nobleboro	Selectboard Member
James M. Grenier	Somerville	EMA Director; Fire Dept.
Gunnar Gundersen	South Bristol	EMA Director
Kyle Santheson	Waldoboro	EMA Director
Roger Higgins; Gaye Wagner	Westport Island	EMA Director; Deputy EMA Director and Deputy Town Clerk
Ted Snowden	Wiscasset	Public Works Director
Public Survey Respondent Summary via Survey Monkey		
NAME	**TOWN**	**TITLE**
Anonymous	Alna	Resident
Anonymous	Boothbay	Resident
Anonymous	Edgecomb	Resident; Fire Officer; Deputy EMA Director
Anonymous	Monhegan	Resident
Anonymous	South Bristol	Resident; EMA Director
Anonymous	Waldoboro	Resident
Anonymous	Waldoboro	Resident
Anonymous	Waldoboro	Resident
Anonymous	Waldoboro	Resident
Anonymous	Waldoboro	Resident
Anonymous	Waldoboro	Resident

Other Notes and Correspondence		
NAME	**TOWN**	**TITLE**
Michael Faas	Dresden	Town Administrator
Ashlea Tibbetts	Southport	Administrative Assistant
Keith Sanborn	Whitefield	Selectboard Member

Summary of Participation of Towns in Planning Process See next section for details on individual attendees					
Municipality	**EMA Directors Meeting 1/21/21**	**EMA Director's Meeting 4/1/21**	**Municipal Feedback Forms**	**Public Hazard Mitigation Survey**	**Other notes and correspondence**
Alna	X		X	X	
Boothbay	X		X	X	
Boothbay Harbor	X	X	X		
Bremen	X	X	X		
Bristol	X	X	X		
Damariscotta	X		X		
Dresden					X
Edgecomb	X	X	X	X	
Jefferson			X		
Monhegan Island Plantation	X	X	X	X	
Newcastle	X		X		
Nobleboro	X		X		
Somerville	X		X		
South Bristol	X	X	X	X	
Southport	X				X
Waldoboro	X		X	X	
Westport Island	X	X	X		
Whitefield					X
Wiscasset	X		X		

Summary of Local Participation:

Participation includes meeting attendance; submitting Feedback forms; online survey; or other correspondence such as 1-1 interviews or email

Comparison of Past & Present Participation				
JURISDICTION	2005 PARTICIPATION	2011 PARTICIPATION	2016 PARTICIPATION	2021 PARTICIPATION
Lincoln County (and UT)	X	X	X	X
Alna, Town of	X	X	X	X
Boothbay, Town of	X	X	X	X
Boothbay Harbor, Town of	X	X	X	X
Bremen, Town of	X	X	X	X
Bristol, Town of	X	X	X	X
Damariscotta, Town of	X	X	X	X
Dresden, Town of	X	X	X	X
Edgecomb, Town of	X	X	X	X
Jefferson, Town of	X	X	X	X
Monhegan Island Plantation	X	X	X	X
Newcastle, Town of	X	X	X	X
Nobleboro, Town of	X	X	X	X
Somerville, Town of	X	X	X	X
South Bristol, Town of	X	X	X	X
Southport, Town of	X	X	X	X

Waldoboro, Town of	X	X	X	X
Westport Island, Town of	X	X	X	X
Whitefield, Town of	X	X	X	X
Wiscasset, Town of	X	X	X	X

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?

Since this is a multijurisdictional plan all 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 a publicly available online survey, the Lincoln County EMA and RPC website, social media promotion, email promotion, and phone calls. Many of the local officials involved in the 2021 update of the plan work in various agencies, businesses, academia, and nonprofit organizations and were asked to provide suggestions on other communities and agencies with relevant input. Communication with state agencies provided additional perspectives on the Plan update.

Federal and national agencies and nongovernmental organizations involved in the planning risk assessment, and analysis process included:

- NOAA – Sea Level Rise Viewer products were used to inform the Risk Assessment. Retrieved from https://coast.noaa.gov/slr/
- The National Weather Service – Gray Forecasting Office reviewed the hazard profiles and provided additional insight into the flooding hazard profile.
- The Nature Conservancy – Coastal Risk Explorer products were used to inform the Risk Assessment.
- U.S. Drought Monitor – consulted as part of the Drought hazard profile.
- FEMA – R-I Community Planner provided guidance for addressing Title 44 CFR; resources were consulted for Hazard Mitigation Planning process and planning.
- U.S. CDC – informed the Pandemic hazard profile.
- USDA Agricultural Census – agricultural commodity sales were used to inform drought loss models in the Risk Assessment. https://www.nass.usda.gov/Quick_Stats/CDQT/chapter/2/table/1/state/ME/year/2017

- U.S. Army Corps of Engineers – consulted regarding development of a hydrodynamic coastal flood and sea level rise model for the Town of Damariscotta to identify local vulnerabilities and potential mitigation actions.
- U.S. Geological Survey – Data Section Chief consulted on Sheepscot River stream gage
- Department of Homeland Security – Homeland Infrastructure Foundation-Level Data used to identify the distribution of critical facilities in municipal risk assessment maps. https://hifld-geoplatform.opendata.arcgis.com/

State and regional resources involved in the planning risk assessment, and analysis process included:

- Maine Emergency Management Agency staff (Anne Fuchs, Director of Mitigation, Planning, and Recovery; Sam Roy, Natural Hazards Planner, Maine Emergency Management Agency; and Heather Dumais; State Hazard Mitigation Officer) – provided needed planning assistance, information and data, and clarifications on process and Hazard Mitigation Plan needs. As part of the planning team. They were consulted input on areas prone to each hazard profiled and possible mitigation at the local and county level. MEMA's Dam Safety Program assisted with the assessment of dam failure risk.
- University of Maine and the Maine Climate Council Scientific and Technical Subcommittee – Provided data to inform the risk assessment.
- The Maine Geological Survey (MGS) – provided information on sea level rise impacts in Lincoln County. MGS also proved useful in assessing coastal bluffs and landslides.
- Maine Forest Service – Regional Forest Ranger provided information for the Wildfire hazard profile.
- Maine Drought Task Force – Group facilitator provided data and consult for the Drought hazard profile.
- Maine Department of Agriculture, Conservation & Forestry's National Flood Insurance Program Coordinator – Provided repetitive loss property information, guidance on best-available Flood Insurance Rate Map data, and further data and guidance.
- Maine State CDC – informed the Pandemic hazard profile.
- Office of the State Economist – provided needed data and guidance on data collection and future state, county, and municipal population projections to assess potential development trends.
- Maine Historic Preservation Commission Assistant Director – provided consultation on preservation practices for historic features in Maine and how these practices align with mitigation efforts. Also discussed recent updates to Maine's Statewide Historic Preservation Plan.
- Land Use Planning Commission Chief Planner – provided guidance on authority and permit requirements for floodplain ordinances in the unorganized territories
- Maine Office of GIS Senior Program Analyst – Spatial information for critical facilities and infrastructure for municipal risk assessment maps. https://www.maine.gov/geolib/catalog.html

Local county and town resources involved in the planning risk assessment, and analysis process included (in addition to participation reported for Elements A1 and A3 above):

- The Lincoln County Emergency Operations Plan – informed the Pandemic hazard profile.
- Lincoln County EMA – provided data supporting estimation of potential damages for each hazard and past LCHMPs from 2005, 2011, and 2016
- Lincoln County Sea Level Rise Study (2015) – informed flooding and storm hazard profiles.

- Lincoln County EMA and local EMA directors – consulted for their input on areas prone to each hazard profiled and possible mitigation actions to be taken at both the county and local level.
- Town select boards – attended County EMA meetings on the plan update and assigned other town officials to participate in the plan development.
- Local fire chiefs and their departments, code enforcement officers, town managers, and town EMA directors – provided the necessary information on needed mitigation actions such as costs, timelines, and priority, updates on previously identified projects, and local knowledge on areas susceptible to natural disasters.
- The Lincoln County Emergency Management Agency – provided direct support to the planning process by convening county-wide meetings, promoting the public survey, and gathering information from local officials.
- The Lincoln County Regional Planning Commission – facilitated the 2021 Hazard Mitigation Plan update process by creating Municipal Feedback Forms, interviewing officials, gathering and analyzing risk assessment data, documenting the process, and putting together the final plan components.
- Statewide County EMA Directors' Meetings – Discussed Plan update strategies, requirements, and best practices from neighboring counties.

Each of the resources, reports, and data are referenced throughout this document and cited where applicable. See Element C1 of this document for more details on existing Authorities, Policies, Programs and Resources.

A4: Does the Plan describe the review and incorporation of existing plans, studies, reports, and technical information?

This Plan is the fourth iteration of the LCHMP and incorporates a broad array of new resources, current discussions, and previous Plan Updates to profile natural hazards, identify associated community risks, address local capabilities, and highlight mitigation actions to reduce observed long-term risks. The review and incorporation process was based on objectives for the current Plan Update to utilize best-available information to meet Plan objectives and provide a comprehensive assessment of hazards, vulnerabilities, capabilities, mitigation actions, and implementation strategies at local, county, state, and federal scales. State and federal authoritative data and reports are used throughout the Plan to support these objectives. Specific reports, plans, studies, reports, guidance, and technical information can be found in Element A2 above, as well as referenced in Element B – Hazard Identification and Risk Assessment and throughout this document.

The Lincoln County Hazard Mitigation 2021 plan update includes reference to the "Disease & Epidemics" chapter of the Lincoln County Emergency Operations Plan. (Appendix D). This document, "describe[s] responsibilities of county and municipal government and public organizations for a major outbreak of a disease or pandemic that causes severe harm or disruption to the municipalities with Lincoln County."

A5: Is there discussion of how the communities will continue public participation in the plan maintenance process?

Lincoln County is dedicated to involving the public directly in the continual reshaping and updating of the Hazard Mitigation Plan. The Hazard Mitigation Plan Evaluation Team members are responsible for the review and update of the plan. Although they represent the public to some extent, the public will be able to directly comment on and provide feedback about the plan. All meetings will continue to be open to the public for opportunities to comment on and provide meaningful input on the Plan.
Copies of the plan will be provided to the municipalities' Emergency Management directors and kept on hand at all municipal town offices in the County. The existence and location of these copies will be publicized by public notice in the local papers and/or on our website and social media. Contained in the plan is the address and phone number of Lincoln County EMA Office, which is responsible for keeping track of public comments on the plan. A public meeting will also be held after each Mitigation Plan Evaluation Team review meeting. This public meeting will provide the public a forum for which they express concerns, opinions, or ideas about the plan. The County EMA Office will publicize and host this meeting. In Lincoln County, hazard mitigation is far more than a written plan. It is an important part of the overall mission of the Lincoln County Emergency Management Agency (EMA), and is fully integrated into the comprehensive nature of the EMA's emergency management responsibilities. Most of the EMA's activities and communications emphasize the importance of planning, preparation, mitigation, training, and emergency response. A partial list of EMA's public outreach efforts includes:

- Maintaining and updating the EMA's website;
- Including on the website and social media public information materials;
- Including on the website and social media notice of training opportunities for local public safety personnel;
- Communicating with the public on an on-going basis through CodeRED;
- 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 600 people;
- Working with Lincoln County Regional Planning Commission to being information on sea level rise to local EMA Directors.

Lincoln County EMA will also continue to provide advisories on its website and social media when public safety may be impacted by hazards such as flooding or severe winter storms.

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)?

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. This plan also includes an explanation of how the county and municipal governments intend to incorporate their mitigation strategies into any existing planning mechanisms they have. See Element C6 of this plan for more details on incorporations of this plan into existing mechanisms. Eighteen months prior to the Hazard Mitigation Plan update deadline, Lincoln County Emergency Management Agency or an organization/agency on behalf of Lincoln County EMA, will organize a Hazard Mitigation Planning Committee meeting. Lincoln County EMA will invite the public, Town 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 Lincoln County Hazard Mitigation Plan draft will be submitted to MEMA for review and recommendations before the final draft is forwarded to FEMA for conditional certification.

Monitoring the Plan

Progress on the plan will be monitored via monthly meetings with MEMA and/or local EMAs and following every federally declared disaster. The second quarter Local EMA meeting of each County fiscal year will include a project and risk assessment review. 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.

Evaluating the Plan

The plan is constantly being evaluated through various measures at county and local levels. Annually and after each disaster declaration, Lincoln County EMA will review the hazards in Element B of this plan. In addition, Lincoln County EMA will contact towns in regards to Form 7 briefings and submittals, workshops on project applications, and for the status on existing projects and the addition of new projects.

Updating the Plan

The plan will be updated every five years. The method for determining what changes might be necessary will be to review and assess information gathered from disaster declarations, unusual weather events and/or significant changes in science or legislation. As previously described, part of that schedule will be reviews on a monthly basis and after disasters, but in the fourth year of the plan, a more in depth review will take place, and the plan will be updated accordingly.

ELEMENT B: HAZARD IDENTIFICATION AND 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 prioritize mitigation actions to reduce losses from identified hazards.

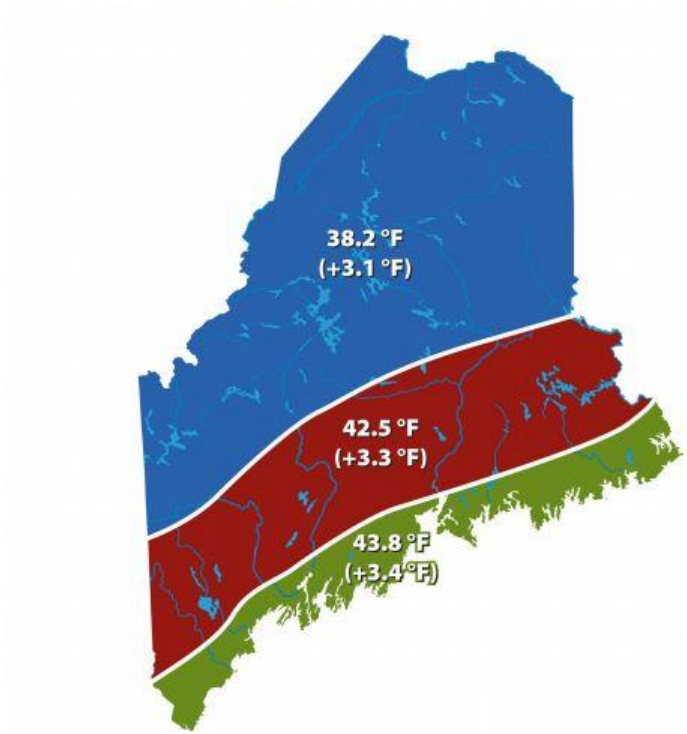
- B1. Does the Plan include a description of the type, location, and extent of all natural hazards that can affect each jurisdiction(s)? (Requirement §201.6(c)(2)(i))
- B2. Does the Plan include information on previous occurrences of hazard events and on the probability of future hazard events for each jurisdiction? (Requirement §201.6(c)(2)(i))
- 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? (Requirement §201.6(c)(2)(ii))
- B4. Does the Plan address NFIP insured structures within the jurisdiction that have been repetitively damaged by floods? (Requirement §201.6(c)(2)(ii))

Updates from the 2016 Plan:
This risk assessment is an update to the assessment performed in 2016. Updates to this report include:

- Updated discussion on the County's climate data;
- Description of hazards, including two (2) added hazards profiled – drought and pandemic;
- Historical storm records;
- Municipal survey responses;
- Current and future vulnerability assessment; and,
- Updated Consumer Price Index (CPI) calculations
- New municipal base maps identifying critical facilities, infrastructure, and extent of flood and hurricane storm surge hazards
- Hazus models indicating potential losses from major flooding, hurricane, or earthquake events

The Code of Federal Regulations §201.6(c)(2) of the Rule outlines specific information that Lincoln County must consider when completing the risk assessment portion of this mitigation plan. Our local risk assessments provide sufficient information to enable the jurisdiction to identify and prioritize appropriate mitigation actions to reduce losses from identified hazards. This plan includes detailed descriptions of

Map: Annual Temperatures by Climate Division



Source: Maine's Climate Future – 2020 Update, UMaine

all the potential hazards that could affect the jurisdiction along with an analysis of the jurisdiction'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 the jurisdiction are included in this analysis. Because this is a multijurisdictional 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 Lincoln 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 affect both the occurrence and severity of flooding and related hazards.

Lincoln County is located wholly within the Coastal Division of Maine's three climatic divisions. The Coastal Division encompasses a 20-30 mile band along the coast of 4,992 square miles (15%) of the State. This division is most affected by the ocean, and has minimal climatic impact from any topographic controls inasmuch as the County has minimal elevation change.

Temperature: Average annual temperature for the Coastal Division is 43.8 degrees Fahrenheit. The temperature average for Lincoln County in July is 69.2 degrees Fahrenheit and 16.5 degrees Fahrenheit in January.

Precipitation: Lincoln County's average amount of precipitation, based on long-term records dating back to 1895, is 45.1 inches of precipitation annually. This includes the conversion of all snowfall to a water-equivalent. Average monthly precipitation is between three and four inches, with October being the wettest month, and February being the driest month. Coastal storms provide the abundant winter precipitation, whereas the cool ocean water and sea breeze help to limit convective activity during the summer, thus inhibiting abundant thunderstorm activity responsible for so much of the summer precipitation in the rest of the central and eastern parts of the country.

Prevailing Winds: Prevailing wind direction varies by season and location. Local influences such as orientation of a valley may also play a key role in dictating prevailing wind direction at any one location. Most of the County is under northwest to west-northwest winds throughout much of the year, particularly during the winter months. Southwest and southerly winds prevail in the summer months due to the frequent formation of a sea breeze, producing cool, refreshing temperatures during the summer along the coast. The formation of a sea breeze particularly occurs when regional winds are weak during the summer months.

The National Weather Service (NWS) Gray Forecasting Office, as part of their review of this Plan, indicated that fall Nor'easter wind storms "*'seam' to be bigger issues than in the past due to multiple factors, but I like to highlight that the threat of these to the coastal counties is very large*". "*Severe wind storms are a much higher threat* [than tornadoes] *to infrastructure and the community as a whole on a county wide scale*."

Climate Variation: This section of the Hazard Mitigation Update provides an overview on how climate has changed over time and how such change is influencing the occurrence and severity of natural hazards in Lincoln County. As described in UMaine's "Maine Climate Future – 2020 Update" [6]report:

> *"While in the past we may have underestimated the rate and severity of climate change, today there is little doubt of the price of unchecked climate change, with the National Climate Assessment estimating a potential cost equal to nearly 10 percent of the U.S. gross domestic product by the end of the century (Berwyn 2018). Since 1980, the U.S. has sustained 241 weather and climate disasters that exceeded $1 billion in damages, with a total cost for these events of $1.6 trillion (Smith 2019). In 2018 alone, there were 14 of these climate disasters with 247 deaths and costs exceeding $1 billion in the U.S. These costs do not include the chronic consequences of a changing climate that we experience every day."*

Additionally, the report notes:

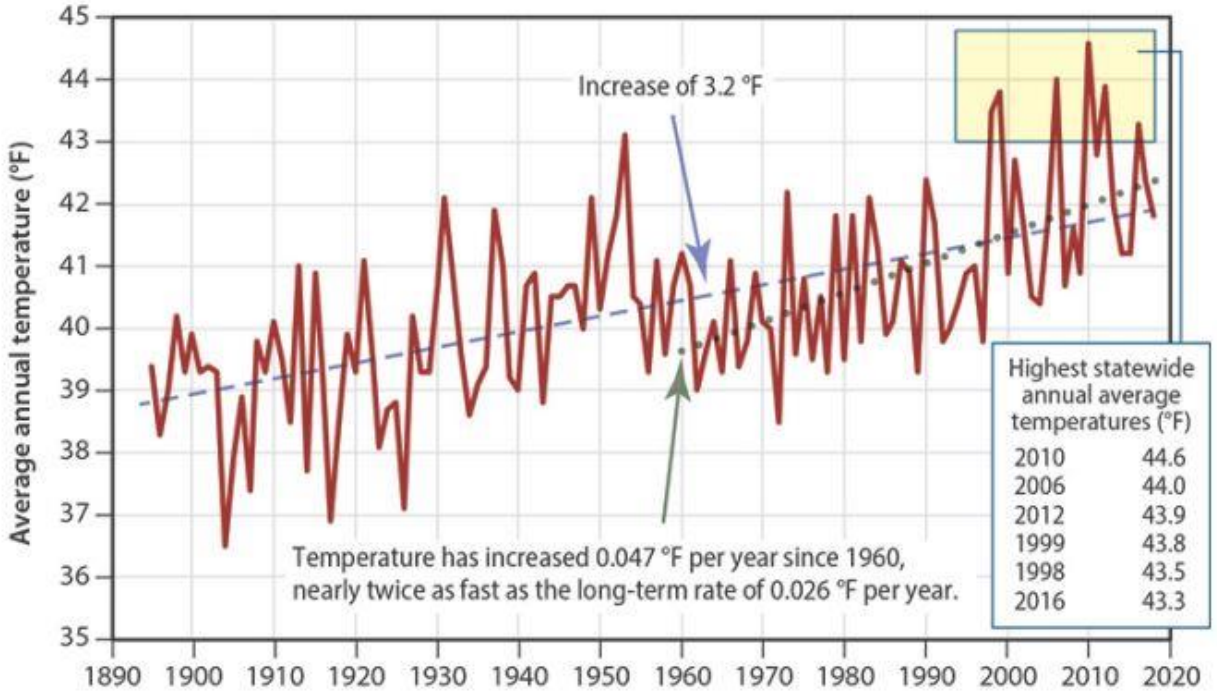
> *"In Maine, we are acutely aware of the importance of our ocean, forests, fields, wetlands, lakes, and rivers to our way of life, our livelihoods, and our economy. All of these characteristics of Maine are shaped, in part, by our climate. We have always dealt with the challenges of weather and the joys of four seasons, but what we are experiencing now is both accelerating change in extremes and long-term averages of weather that reflect fundamental changes in the boundary conditions, or the historical range of conditions, of our climate."*

Temperature Changes: Excerpts from the report "Maine's Climate Future – 2020 Update", prepared by the University of Maine, includes the following:

> "*Temperatures are increasing statewide. Average annual temperature has increased 3.2 degrees Fahrenheit in the last 124 years, and the rate of warming has increased most notably since 1960. The six warmest years on record have occurred since 1998. Indeed, the Northeast is warming faster than any other region in the U.S., and is projected to warm 5.4°F (3°C) when the rest of the world reaches 3.6°F (2°C). The whole state has warmed, and* ***temperature increases have been greatest in the coastal division*** (emphasis added)".

[6] Fernandez, I., S. Birkel, C. Schmitt, J. Simonson, B. Lyon, A. Pershing, E. Stancioff, G. Jacobson, and P. Mayewski (2020). *Maine's Climate Future 2020 Update*. https://climatechange.umaine.edu/wp-content/uploads/sites/439/2020/02/Maines-Climate-Future-2020-Update-3.pdf

Chart: Maine Average Annual Air Temperature, 1895-2018



Source: Maine's Climate Future – 2020 Update; UMaine

Precipitation Changes: As noted in the "Scientific Assessment of Climate Change and Its Effects in Maine" prepared by the Maine Climate Council's Scientific and Technical Subcommittee, issued in August 2020[7]:

> "*Statewide, total annual precipitation (rainfall and snowfall) has increased by about 6.1 inches (155 mm), with more rain and less snow falling since 1895. Across the northeastern U.S., the most pronounced increase has occurred over the past 20 years, with* ***total annual surpluses driven by more frequent and intense extreme precipitation events occurring primarily in summer and fall.*** *With the exception of 2016-17, wet conditions have persisted in Maine since the mid-2000s. During this wet interval, high-pressure blocking patterns have developed more frequently over Greenland in conjunction with changes in atmospheric features elsewhere across the Northern Hemisphere. Maine's precipitation stems in part from these large-scale linkages, or climate 'teleconnections'* (emphasis added)".

[7] Maine Climate Council Scientific and Technical Subcommittee (August 2020). *Scientific Assessment of Climate Change and Its Effects in Maine*. https://www.maine.gov/future/sites/maine.gov.future/files/inline-files/GOPIF_STS_REPORT_092320.pdf

Additionally, the "Maine's Climate Future – 2020 Update" states:

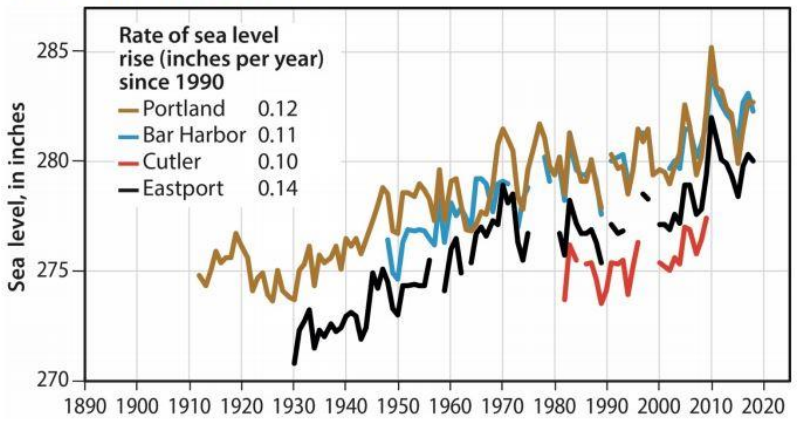
> *"Average annual precipitation has increased 15 percent (5.8 inches) since 1895, and the increase has come in the form of more rain, and less snow. Since 1895, depth of annual snowfall has decreased 20 percent (2.3 inches). As with temperature, the rate of increase has accelerated in recent decades".*
>
> *"Coastal locations are seeing even greater increases in storm precipitation intensity. Other studies have found increases in heavy precipitation across the northeastern U.S. in the last two decades, mostly associated with September-October tropical cyclones (hurricanes) and a warming Atlantic Ocean."*
>
> *"Increased precipitation means increased volume of runoff to local streams, rivers, and ultimately the Gulf of Maine. These higher flows and floods can impact drinking water and damage roads, bridges, and properties. Storms often include strong winds, such as the October 2017 event that was the worst wind storm in Maine's history. More than half a million people lost electricity due to damaged power lines that cost Central Maine Power Company $69 million."*

<u>Sea Level Rise</u>: According to Maine's coast has been and will an increase in sea level. The fluctuations in sea level due to Stream and seasonal wind the longest record, the edge of record keeping began in 1912.

Per the "Maine's Climate Future *rate for the full length of the per year, but since 1990 the rate year*".

> *"Higher sea levels mean causing more frequent when coastal water levels term average daily high tide".*

Graph: Sea Level Rise in Maine



Annual mean sea level from four long-term observation sites along the Maine coast. Data from the Permanent Service for Mean Sea Level (Holgate et al. 2013, PSMSL 2019)

Source: "Maine's Climate Future – 2020 Update"; UMaine

the State's Hazard Mitigation Plan [8], continue to be profoundly affected by Gulf of Maine is especially susceptible to changes in the strength of the Gulf patterns. At Portland, the station with the water has risen 7.5 inches since

– 2020 Update" "*The overall average record to the present was 0.07 inches has accelerated to 0.12 inches per*

that regular high tides are also higher, 'sunny day' or 'nuisance' flooding, reach or exceed two feet above the long-

[8] Maine Emergency Management Agency (October 2019). *Maine State Hazard Mitigation Plan*.https://www.maine.gov/mema/sites/maine.gov.mema/files/inline-files/State%20Hazard%20Mitigation%20Plan%202019%20Update_10.8.2019.pdf

The result of the gradual increase in sea level has been increased flooding, erosion of coastal bluffs, and landslides. The Maine Climate Council in 2020 announced the following "Commit to Manage" and "Prepare to Manage" sea level rise (in feet) scenarios for 2030 through 2100:

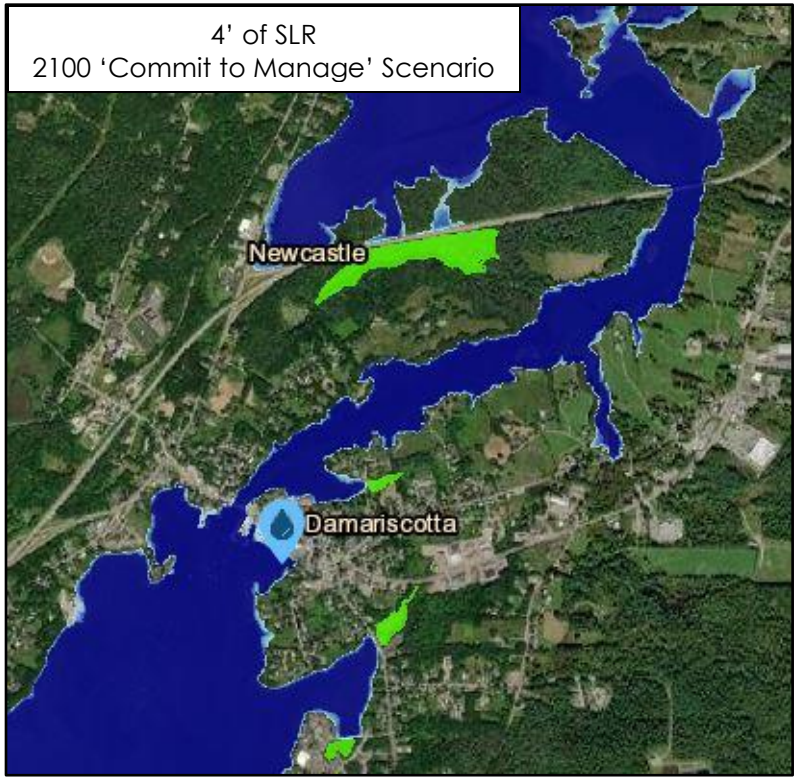
Planning Scenario	**"Commit to Manage"**	**"Prepare to Manage"**
Year	*Intermediate Scenario*	*High Scenario*
2030	0.8	1.4
2050	1.5	3.0
2070	2.4	5.0
2100	3.9	8.8

To illustrate the Maine Climate Council's sea level rise scenarios, the Planning Team utilized the National Oceanic and Atmospheric Administration's (NOAA) Sea Level Rise Viewer[9].

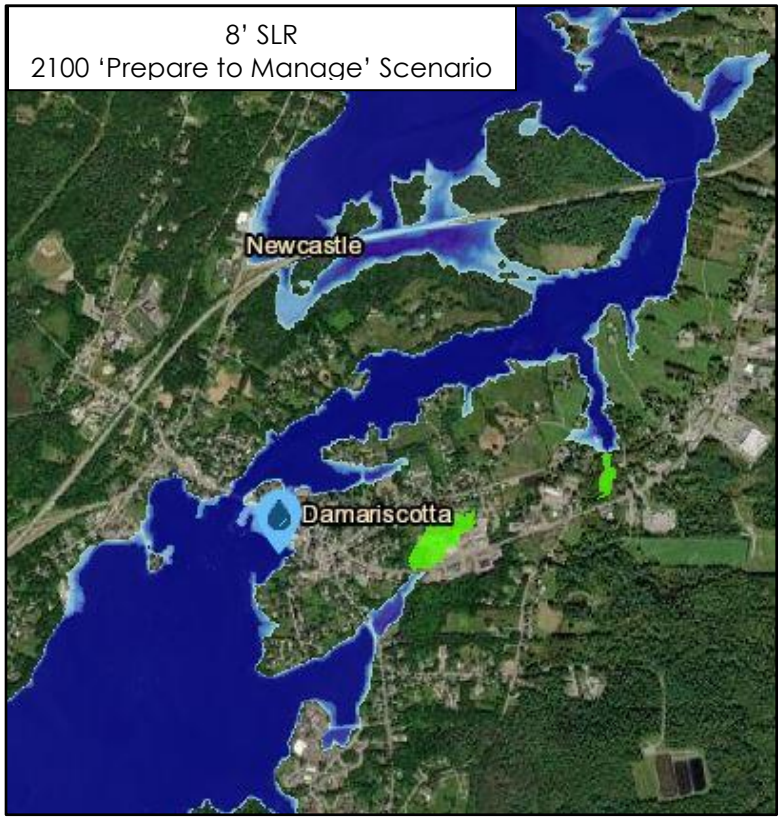
Below is a scenario of the Twin Villages – Damariscotta and Newcastle – and how they will be impacted due to a sea level rise of four (4) feet (i.e., the 2100 'Commit to Manage' Scenario) and eight (8) feet (i.e., the 2100 'Prepare to Manage' Scenario). The areas in green are low-lying areas and the areas in shades of blue indicate water depths.

[9] National Oceanic and Atmospheric Administration (08/17/2020). Sea Level Rise Viewer v. 3.0.0. https://coast.noaa.gov/slr/#/layer/slr/7/-7740338.988884284/5471506.417406769/14/satellite/179/0.8/2050/interHigh/midAccretion. Accessed 08/30/2021.

Map showing current Mean Higher High Water levels of the Twin Villages – Damariscotta and Newcastle
Source: NOAA Sea Level Rise Viewer

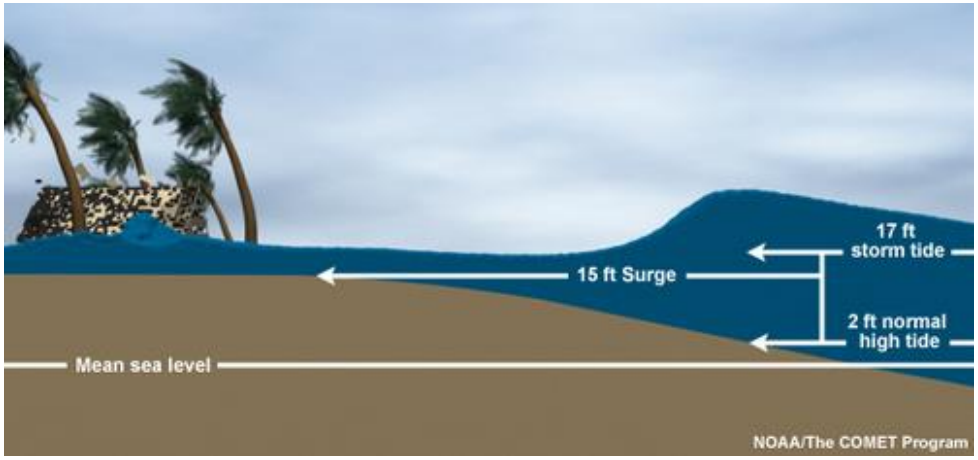


Map showing the impact of 4' of SLR on the Twin Villages – Damariscotta and Newcastle; Source: NOAA Sea Level Rise Viewer



Map showing the impact of 8' of SLR on the Twin Villages – Damariscotta and Newcastle; Source: NOAA Sea Level Rise Viewer

One of the consequences of sea level rise is the damage that can occur from storm surges. Storm surge is simply water that is pushed toward the shore by the force of the winds swirling around the storm as well as low barometric pressure. This advancing surge combines with the normal tides to create the storm tide. In addition, wind driven waves are superimposed on the storm tide. This rise in water level can cause severe flooding in coastal areas, particularly when the storm tide coincides with the normal high tides. The following illustration shows how storm surge can increase flooding risk.



Along the Maine Coast, a sea level rise of one (1) foot means more homes, businesses, public infrastructure (such as roads), and entire communities could be subject to more devastating coastal floods on a more frequent basis.

Lincoln County Sea Level Rise – Coastal Hazard Study: The Lincoln County Sea Level Rise – Coastal Hazard Study[10] was conducted jointly by the Lincoln County Regional Planning Commission (LCRPC) and the Maine Geological Survey (MGS) with support from the Maine Coastal Program. The purpose of the study was to determine the potential impacts of increasing sea level on the County's 450 miles of tidal shoreline. The study included 10 sea level rise scenarios including the impacts of 0.3 m (1-foot), 0.6 m (2-foot), 1 m (3.3-foot) and 1.8 (6-foot) increases in sea level on the highest annual tide (HAT) as well as the "Storm of Record", which for Lincoln County was the February 1978 storm, which resulted in the highest observed Stillwater elevations along the Maine coastline. The storm combined an approximate 3.5 feet of storm surge with astronomically high tides.

More recently, the Nature Conservancy in Maine has created the Coastal Risk Explorer[11], developed in coordination with Bowdoin College, the Maine Geological Survey, and Blue Sky Planning Solutions. The Explorer uses projected sea level rise scenarios to understand which locations would be cut off from emergency medical services due to road flooding and incorporates an analysis indicating how vulnerable members of a community are to the challenges created by sea level rise based on demographic factors (socioeconomic status, household ages and disabilities, housing, transportation access, etc.).

Per the Nature Conservancy: "*The Coastal Risk Explorer allows communities to explore factors that would make it difficult for certain populations to evacuate or relocate when faced with flooding events and other emergencies. Planners can use this information to strategically upgrade culverts and locate emergency medical services based on where their most vulnerable populations are located, reducing the likelihood that they will be inaccessible during a flooding event*".

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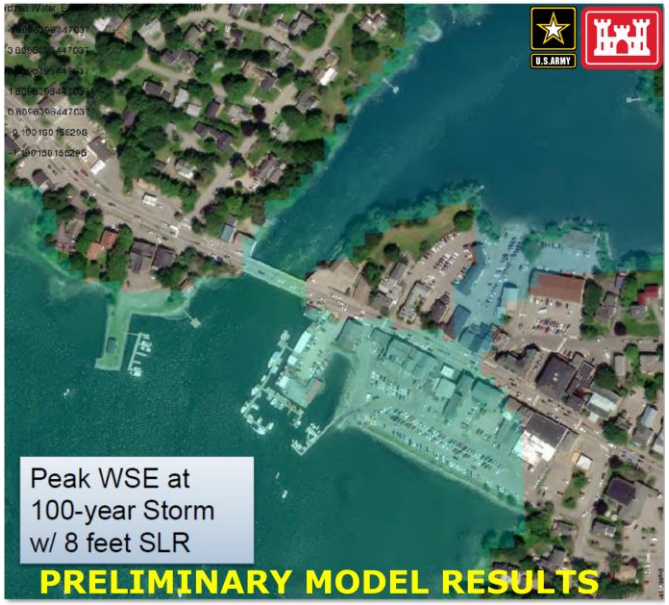
[10] Lincoln County Regional Planning Commission, Lincoln County Commissioners, Maine Geological Survey, and Maine Coastal Program (2015). *Lincoln County Sea Level Rise Flood Study (Updated)*. https://www.lcrpc.org/coastal-projects-planning/lincoln-county-sea-level-rise-flood-study-updated

[11] The Nature Conservancy in Maine, Bowdoin College, Maine Geological Survey, and Blue Sky Planning Solutions (2019). *Coastal Risk Explorer*. https://maps.coastalresilience.org/maine/

The Risk Explorer can be used as a complementary data source to the Sea Level Rise Flood Study prepared by the Lincoln County Regional Planning Commission (LCRPC) in 2013 and updated in 2015.

During 2021, the U.S. Army Corps of Engineers, in collaboration with federal and state agencies and the Town of Damariscotta, began development of a dynamic model to simulate flood conditions under different sea level rise projections. The dynamic flood model incorporates best-available topographic, bathymetric, land cover, and streamflow data to simulate coastal flood risk in Damariscotta and Newcastle. Unlike the Special Flood Hazard Areas monitored in current town flood ordinances, these models project future flood risk based on a combination of sea level rise and storm recurrence intervals identified by the Maine Climate Council and hydrologic analysis, respectively. Preliminary results suggest that sea level rise will contribute to substantial growth of the flood zone in downtown Damariscotta during major rainfall or storm surge events. Implementation of mitigation actions listed under Elements C4-C5 will therefore be crucial for reducing long-term risk to coastal and riverine flood hazards. When complete, the model will provide best-available information on future flood risks.



Dynamic flood model indicating future inundation risk for downtown Damariscotta and Newcastle, Maine.

B1: Does this Plan include a description of the type, location, and extent of all natural hazards that can affect each jurisdiction(s)?

B2: Does the Plan include information on previous occurrences of hazard events and on probability of future hazard events for each jurisdiction?

Requirement: §201.6(c)(2)(i): (The risk assessment shall include) a description of the type, location and extent of all natural hazards that can affect the jurisdiction.

Description of All Natural Hazards Potentially Affecting Lincoln County: The Lincoln County Hazard Mitigation Planning Team identified several natural hazards that are addressed in the Lincoln County Multi-Jurisdictional Hazard Mitigation Plan. These hazards were identified through an extensive process that utilized input from the Hazard Mitigation Planning Team members, public input via our website, social media, public comments during Select Board meetings, researching past disaster declarations in Lincoln County, review of current maps, and a risk assessment completed by the Lincoln County Emergency Management Agency and Lincoln County Regional Planning Commission.

The following table identifies the natural hazards to be profiled as well as the hazards that were eliminated from further consideration in the plan, due to a lack of historical evidence, 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 occur or could not occur and cause impactful damage. It was decided by the Lincoln County Hazard Mitigation Planning Team to keep the plan simple by only profiling the top six hazards.

Summary of All Natural Hazards Potentially Affecting Lincoln County		
NATURAL HAZARD	DETERMINATION OF APPLICABILITY TO LINCOLN COUNTY	COMMENT
Hazards Profiled in this Plan		
Flooding	-Review of FIRM maps -Review of sea level rise projections -Input from stakeholders -Input from the general public -Review of past disaster declarations -Identification of repetitive losses -Risk Assessment – State Plan 2018	Associated with the effects of spring runoff, coastal storms, and sea level rise. Several repetitive loss properties and roadways are located in the County. The County contains two minor rivers and a number of streams and lakes.
Severe Summer Storms	-Review of State Plan -Review of County Plans -Review of past County damages -Discussion of changes in risk	In the past decade, the intensity of high wind and rain events appears to be increasing in Lincoln County.

Severe Winter Storms	-Review of past disaster declarations -Input from stakeholders -Input from the general public -Risk assessment -Review of State Plan	Lincoln County is frequently hit with blizzards and Nor'easter storms. Its coastal communities are often subject to ice storms.
Wildfire	-Maine Forest Service records -Input from stakeholders -Input from the general public -Risk assessment	Much of the County is covered with forests. Wildfires have been numerous, though small, in the past.
Drought	-MEMA Drought Task Force -U.S. Drought Monitor -Input from stakeholders -Input from general public -Risk assessment	The State of Maine, and Lincoln County, have experienced more frequent drought conditions in recent years, impacting agriculture production and residential water supply.
Pandemic	-Center for Disease Control (CDC) -Input from stakeholders -Input from general public -Risk assessment	Lincoln County and the State of Maine have been impacted by the ongoing COVID-19 Pandemic, which is a public health issue.
Hazards Not Profiled in this Plan		
Avalanche	-Review of USGS maps	There are no mountains in Lincoln County that hold large amounts of snow which could create avalanches.
Blight Infestation	-Review of State Entomological Office historical records	Though Lincoln County is heavily dependent on its agricultural production, to include forestry, farming, and fishing, there are no historical records of major damage to these products that have caused serious economic conditions.
Erosion	-Review of Maine DEP records -Review of NRCS information	Lincoln County is undergoing development pressure along the coast. This could exacerbate erosion along local roads. See flooding section.

Dam Failure	-Review of Historical Records -Risk Assessment under the Flooding Hazard Profile	There have been no dam failures in the history of the County that have caused major flooding or damages, but two small dams did fail – see Flood section of profiled hazards.
Earthquake (≥5.0 magnitude)	-Review of Maine Geological Survey records	Although earthquakes are common in Maine, no significant damaging movement has occurred in 20,000 years in Lincoln County.
Epidemic	-Review of Maine Dept. of Human Service Records - Risk Assessment in the Pandemic Hazard Profile discussing COVID-19 Pandemic	With the exception of the COVID-19 Pandemic, there have been no major outbreaks from disease that have caused serious harm in Lincoln County.
Hurricanes	-Review of past disaster declarations -Risk Assessment in the Summer Storms Hazard Profile	The County is hit about every decade by a Category 1 hurricane. The primary damage is caused by high winds and flooding and these effects are discussed under the sever summer storm hazard.
Landslide	-Review of Maine Geological Survey records and Inland landslide maps	Landslides are not common in Lincoln County. The inland land slide maps show only three inland slides.
Subsidence	-Review of Maine Geological Survey records	There have been no known cases of subsidence in Lincoln County.
Tornado & Severe Wind Storms	-Review of NWS records	On average, 1-2 F0-F1 tornadoes occur in the State of Maine each year, yet there have been no loss of life or major damages in many years in Lincoln County.

Rating of Natural Hazards:

The following table rates the natural hazards to be profiled. Be advised, the hazard ratings have not changed substantially in the last five years, therefore the ratings from the 2016 Plan continue to be used. Pandemic and Drought have not been rated by the Planning Team inasmuch as both hazards are relatively recent changes and did not allow time to go through the formal rating process, though they pose an imminent threat to the County and its jurisdictions.

Key to Rating

Severity of Hazard:

3	Severe	Multiple deaths, mass casualties, or millions of dollars in damages
2.5	High	Deaths or injuries; or $100,000s in damages
2	Moderate	Single death or several injuries; or $10,000s in damages
1.5	Low	Injuries; or $1,000s in damages
1	Slight	No deaths, single injury; or $100s in damages

Likelihood of Hazard:

A	Very Likely
B	Possible
C	Very Unlikely

Rating of Hazards by Hazard Mitigation Planning Team				
TYPE OF HAZARD	POTENTIAL DAMAGES	SOURCE OF INFORMATION	RATING	PRIORITY
Flooding	Damages to structures in flood zones, bridges, culverts, and roads	FEMA MEMA Sources	3A	1
Severe Summer Storm	Damages to structures in flood zones, bridges, culverts, and roads; downed power lines	FEMA MEMA Sources	2.5A	2
Severe Winter Storm	Downed power lines, blocked roadways and heavy snow damage	FEMA MEMA Sources	2A	3
Wildfire	Timber lost, homes lost, businesses lost	Maine Forest Service/MEMA	2B	4

Drought	Impacts to agricultural production and residential water supply	Maine Drought Monitor/MEMA	--	--
Pandemic	Impacts to public health	FEMA/MEMA	--	--

FLOODING

Lincoln County is subject to coastal storm surge and flooding inasmuch as three rivers are located within the borders of the County. The Damariscotta River is bordered by the towns of Boothbay, Boothbay Harbor, Damariscotta, Edgecomb, Jefferson, Newcastle, Nobleboro, and South Bristol. The Sheepscot River is bordered by the towns of Alna, Boothbay, Boothbay Harbor, Edgecomb, Newcastle, Southport, Westport Island, Whitefield, and Wiscasset. The Medomak River is bordered by the towns of Bremen and Waldoboro. No large dams exist on any of these rivers. The Damariscotta River has one small dam located in the town of Damariscotta. Flooding from the Damariscotta and Sheepscot rivers has occurred on several occasions in Lincoln County communities.

General Definition of Flooding: FEMA defines "flood" as "*a general and temporary condition of partial or complete inundation of 2 or more acres of normally dry land area or of 2 or more properties (at least 1 of which is the policyholder's property) from:*

- *Overflow of inland or tidal waters;*
- *Unusual and rapid accumulation or runoff of surface waters from any source; or*
- *Mudflow; or*

Collapse or subsidence of land along the shore of a lake or similar body of water as a result of erosion or undermining caused by waves or currents of water exceeding anticipated cyclical levels that result in a flood as defined above".

Types of Flooding in Lincoln County: Per the National Weather Service, Gray Office, flooding in Lincoln County is often associated with a Nor'easter, Tropical Cyclone, or ice jams. Past storm reports suggest flooding from rainfall alone produces very little property damage unless there are additional contributing factors such as storm surge, backwater from a mainstem river, or ice jams. Freshwater flooding most often occurs during the spring when heavy rains fall on snow covered or frozen ground. Flash flooding is possible with thunderstorms producing 3 inches of rainfall an hour, but not often as impactful as spring flooding. Based on the COOP Weather Observer in Newcastle, the mean annual precipitation is 44 inches, the wettest year on record was 2005 at 71.56 inches, and the driest with 33.81 inches in 1985. The seasonal snowfall average is 78 inches, with the highest amount in a single season 139.3 inches in 2015 and 1971.

The Maine USGS operates one local stream gage in Lincoln County, the Sheepscot River at North Whitefield. This station has been present since 1938. However riverine flooding from the Sheepscot and Damariscotta Rivers is often not impactful to the area. Based on FEMA Flood Insurance Study, it would likely take a flood of 1987 discharges to cause impacts up to the 1% flood level.

The following types of flooding have potential to occur in Lincoln County:

Coastal Flooding: The temporary inundation of beaches and other land areas by the sea, usually as a result of coastal storms. Coastal flooding comes with two significant components: still water and storm surge. The typical high winds associated with coastal flooding exacerbate the flooding by "pushing" more water toward land. A nor'easter can cause a storm surge along the Maine coast. Fetch (the distance the wind can blow toward the shore from out at sea) is a significant factor in coastal flooding depths. The shape of the ocean floor just offshore is another variable. Wave action is another huge part of the coastal flood threat,

such as during the Patriots Day Storm in 2007. Pounding surf and wave action can lead to severe road and beach erosion and wave run-up can locally induce storm surge water levels of three (3) to four (4) feet. Wave run-up is often overlooked and not shown on any standard GIS Sea Level Rise Viewer but is indicated in the FEMA Flood Insurance Rate Maps (FIRMs) Velocity Zones.

Dam Failure/Breach: Defined by FEMA as "*A catastrophic type of failure characterized by the sudden, rapid, and uncontrolled release of impounded water, or the likelihood of such an uncontrolled release. It is recognized that there are lesser degrees of failure and that any malfunction or abnormality outside the design assumptions and parameters that adversely affect a dam's primary function of impounding water is properly considered a failure. These lesser degrees of failure can progressively lead to or heighten the risk of a catastrophic failure. They are, however, normally amenable to corrective action*".

Riverine/Riparian: Periodic overbank flow of rivers and streams, usually the result of spring runoff, but can also be caused by major rain storms.

Tsunami: A wave produced by a disturbance that displaces a large mass of water – usually a result of geographic activities such as earthquakes, volcanic eruptions, underwater landslides, or in rare geologic cases, meteor strikes. After such a disturbance, displaced water travels outward from its site of origin as a series of unusually large waves at great speeds (Komar, 1996). All areas with an elevation less than 100 feet and within a mile of the coast could be impacted by a tsunami. Based on information obtained from the Maine Geological Survey, the change of a catastrophic event are minimal. Moreover, with the presence of the relatively shallow Georges Bank offshore, Maine remains protected from the full force of an Atlantic Ocean tsunami.

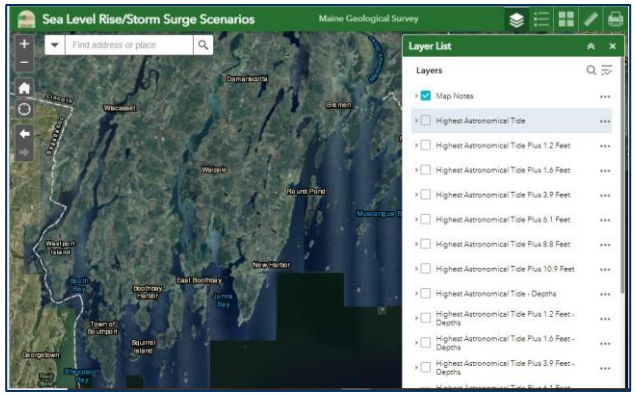
Urban: Overflow of storm sewer systems, usually due to poor drainage, following heavy rain or rapid snow melt. The combined sanitary and storm water systems that some urban areas installed years ago cause flooding of sanitary sewerage when riparian or coastal floods occur. Runoff is increased due to a large amount of impervious surfaces such as roof tops, sidewalks, and paved streets.

Location of Flooding Hazard: The County EMA has reviewed the County's Flood Insurance Rate Maps (FIRMS) and Flood Insurance Studies to compile a profile of the flooding hazard in the County. The Planning Team completed research on flooding history in the County and summarizes this data herein.

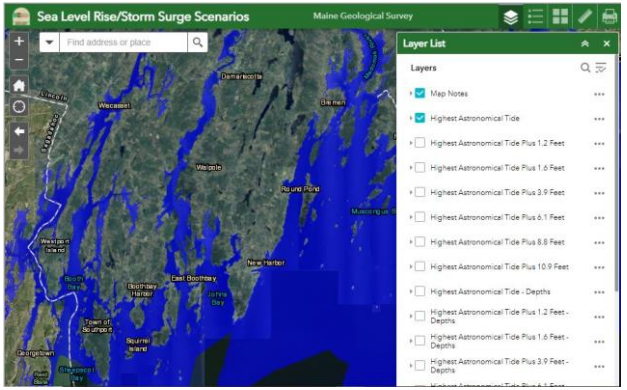
As part of this risk assessment, the Planning Team utilized the Maine Geological Survey Sea Level Rise and Storm Surge Scenario Maps[12] to look at the areas in Lincoln County to be impacted during Highest Astronomical Tide; 1.6 ft. of sea level rise (SLR); and 3.9 ft. of SLR.

In addition, refer to the Hazus flood report in the Assessing Vulnerability section and the municipal base maps for geospatial information on the specific location and extent of flood hazards in participating jurisdictions. The flood report is also included in Appendix F of this plan.

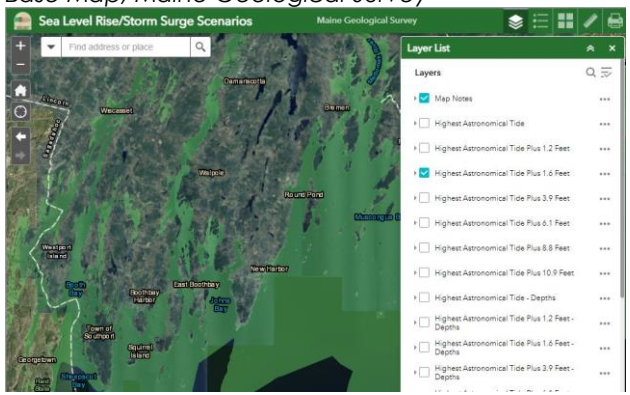
[12] Maine Geological Survey (2020). *Sea Level Rise/Storm Surge*. https://www.maine.gov/dacf/mgs/hazards/slr_ss/index.shtml. Accessed May 10, 2021.



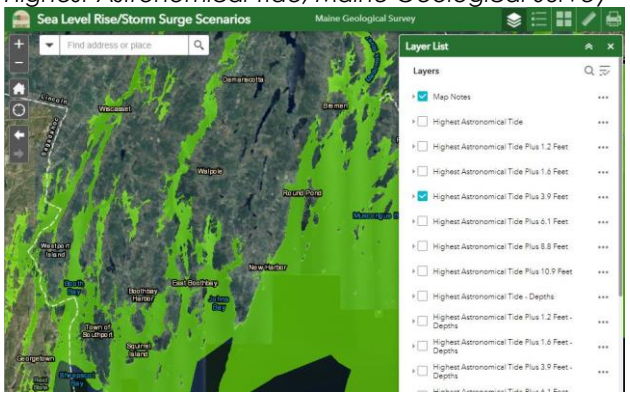
Base Map, Maine Geological Survey



Highest Astronomical Tide, Maine Geological Survey

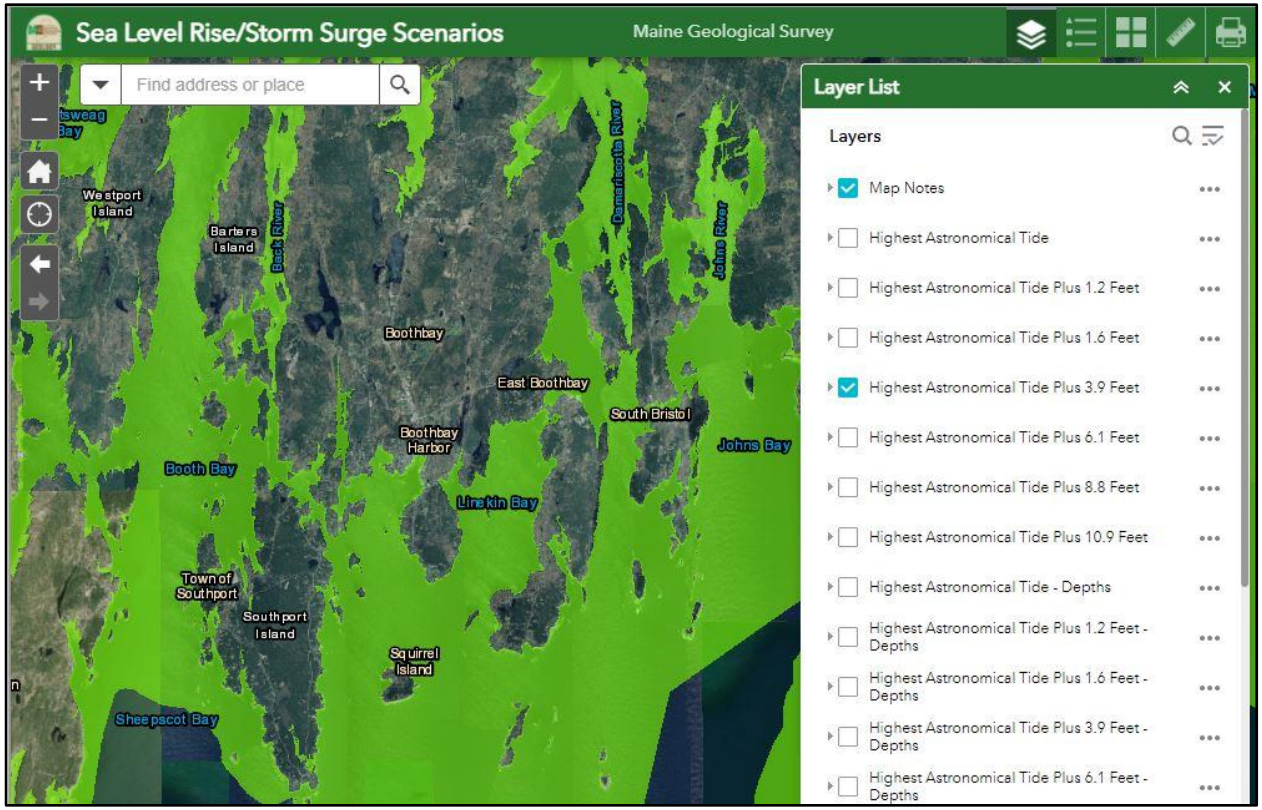


Highest Astronomical Tide + 1.6 ft.; Maine Geological Survey

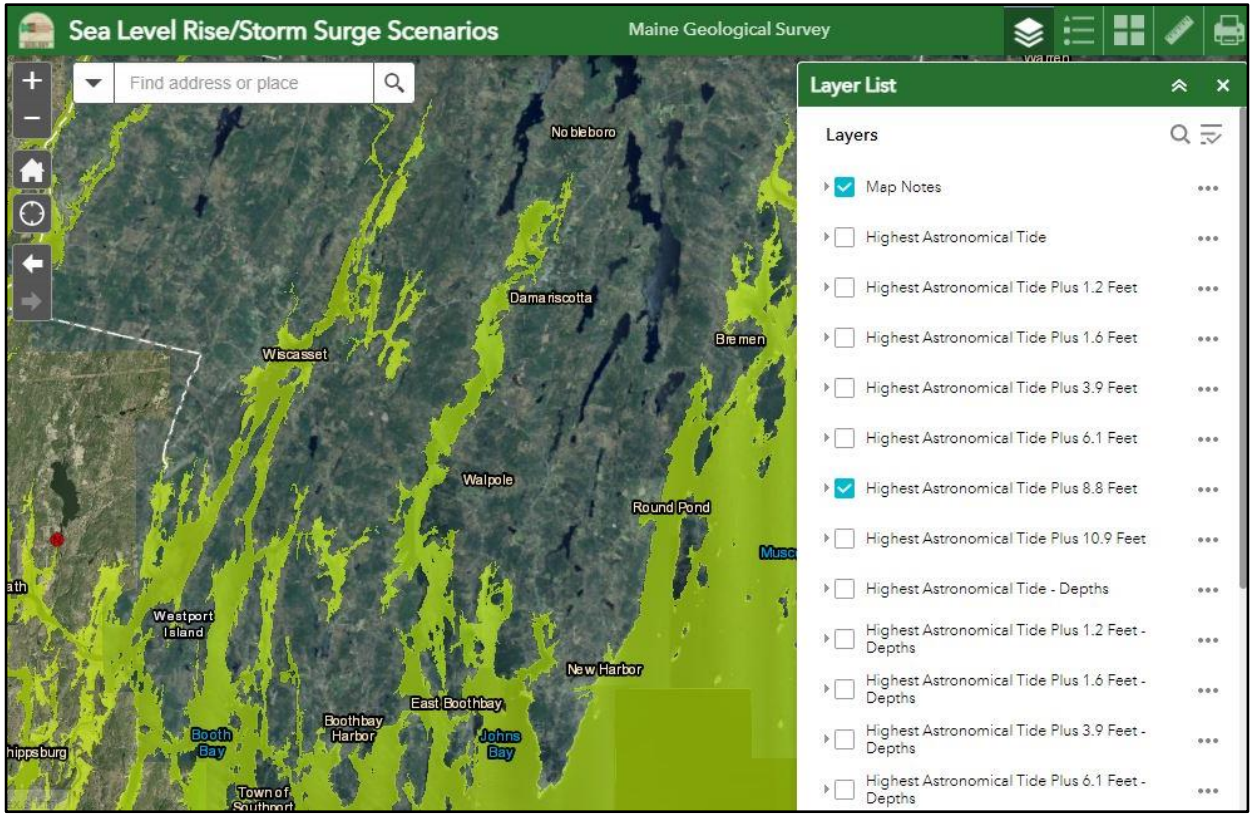


Highest Astronomical Tide + 3.9 ft.; Maine Geological Survey

As shown in the Maine Geological Survey map close-ups below, the most susceptible communities to coastal flooding are the downtown districts of Boothbay Harbor, Damariscotta, and the C1 Commercial District of Boothbay. Potential exists for Westport Island and Southport to be cut off from the mainland if their bridges to the mainland become flooded.



Boothbay Peninsula at Highest Astronomical Tide + 3.9 ft.
Source: Maine Geological Survey



Westport, Wiscasset, and Damariscotta at Highest Astronomical Tide + 8.8 ft.
Source: Maine Geological Survey

FEMA Flood Insurance Rate Maps (FIRMs): Below is a table identifying the applicable FEMA Flood Insurance Rate Maps (FIRMs) for each municipality within Lincoln County.

Alna	Applicable FIRMs (last dated July 16, 2015): 23015C0120D; 23015C0140D; 23015C0235D; 23015C0244D; 23015C0245D; 23015C0255D; 23015C0265D
Boothbay	Applicable FIRMs (last dated July 16, 2015): 23015C0334D; 23015C0341D; 23015C0342D; 23015C0343D; 23015C0344D; 23015C0355D; 23015C0361D; 23015C0362D; 23015C0363D; 23015C0364D; 23015C0431D; 23015C0432D; 23015C0444D; 23015C0451D; 23015C0452D; 23015C0453D; 23015C0454D; 23015C0461D; 23015C0462D; 23015C0463D; 23015C0464D; 23015C0470D
Boothbay Harbor	Applicable FIRMs (last dated July 16, 2015): 23015C0427D; 23015C0431D; 23015C0432D; 23015C0434D; 23015C0451D; 23015C0453D

Bremen	Applicable FIRMs (last dated July 16, 2015): 23015C0279D; 23015C0283D; 23015C0287D; 23015C0288D; 23015C0289D; 23015C0291D; 23015C0292D; 23015C0293D; 23015C0294D; 23015C0313D; 23015C0377D; 23015C0379D; 23015C0380D; 23015C0381D; 23015C0382D; 23015C0383D; 23015C0384D; 23015C0401D
Bristol	Applicable FIRMs (last dated July 16, 2015): 23015C0268D; 23015C0269D; 23015C0288D; 23015C0356D; 23015C0360D; 23015C0366D; 23015C0367D; 23015C0368D; 23015C0369D; 23015C0377D; 23015C0379D; 23015C0380D; 23015C0386D; 23015C0387D; 23015C0388D; 23015C0389D; 23015C0391D; 23015C0392D; 23015C0456D; 23015C0457D; 23015C0459D; 2315C0476D
Damariscotta	Applicable FIRMs (last dated July 16, 2015): 23015C0259D; 23015C0266D; 23015C0267D; 23015C0268D; 23015C0269D; 23015C0278D; 23015C0279D; 23015C0286D; 23015C0287D; 23015C0288D; 23015C0289D
Dresden	Applicable FIRMs (last dated July 16, 2015): 23011C0688D; 23011C0689D; 23023C0108F; 23023C0116F; 23015C0207D; 23015C0209D; 23015C0216D; 23015C0217D; 23015C0219D; 23015C0226D; 23015C0227D; 23015C0228D; 23015C0229D; 23015C0235D; 23015C0240D
Edgecomb	Applicable FIRMs (last dated July 16, 2015): 23015C0244D; 23015C0265D; 23015C0331D; 23015C0332D; 23015C0333D; 23015C0334D; 23015C0341D; 23015C0342D; 23015C0352D; 23015C0354D; 23015C0355D; 23015C0361D; 23015C0362D
Hibberts Gore (UT)	Applicable FIRMs (last dated July 16, 2015): 23015C0060D; 23015C0055D
Jefferson	Applicable FIRMs (last dated July 16, 2015): 23011C0570D; 23013C0125D; 23015C0044D; 23015C045D; 23015C0131D; 23015C0132D; 23011C0133D; 23015C0134D; 23015C0140D; 23015C0141D; 23015C0142D; 23015C0143D; 23015C0144D; 23015C0151D; 23015C0152D; 23015C0153D; 23015C0154D; 23015C0158D; 23015C0161D; 23015C0162D; 23015C0163D; 23015C0166D; 23015C0255D; 23015C0256D; 2301C0257D
Louds Island and Lincoln County Islands (UT)	Applicable FIRMS (Last dated July 16, 2015): 0379D; 0383D; 0387D; 0391D
Monhegan Island Plantation	Applicable FIRMs (last dated July 16, 2015): 23015C0500D; 23015C0514D; 23015C0515D; 23015C0518D; 23015C0520D; 23015C0525D; 23015C0726D
Newcastle	Applicable FIRMs (last dated July 16, 2015): 23015C0244D; 23015C0255D; 23015C0256D; 23015C0257D; 23015C0258D; 23015C0259D; 23015C0265D; 23015C0266D; 23015C0267D; 23015C0268D; 23015C0352D; 23015C0355D; 23015C0356D
Nobleboro	Applicable FIRMs (last dated July 16, 2015): 23015C0161D; 23015C0162D; 23015C0163D; 2301C0164D; 23015C0168D; 23015C0257D; 23015C0259D; 23015C0276D; 23015C0277D; 23015C0278D; 23015C0279D
Somerville	Applicable FIRMs (last dated July 16, 2015): 23015C0035D; 23015C0042D; 23015C0044D; 23015C0053D; 23015C0055D; 23015C0060D; 23015C0061D; 23015C0065D; 23015C0151D; 23015C0152D; 23015C0156D
South Bristol	Applicable FIRMs (last dated July 16, 2015): 23015C0354D; 23015C0356D; 23015C0360D; 23015C0362D; 23015C0364D; 23015C0366D; 23015C0368D; 23015C0452D; 23015C0454D; 23015C0456D; 23015C0458D; 23015C0459D; 23015C0462D; 23015C0470D
Southport	Applicable FIRMs (last dated July 16, 2015): 23015C0427D; 23015C0429D; 23015C0431D; 23015C0432D; 23015C0433D; 23015C0434D; 23015C0441D; 23015C0442D; 23015C0443D; 23015C0444D; 23015C0453D; 23015C0461D
Waldoboro	Applicable FIRMs (last dated July 16, 2015): 23015C0158D; 23015C0159D; 23015C0164D; 23015C0166D; 23015C0167D; 23015C0168D; 23015C0169D; 23015C0178D; 23015C0179D; 23015C0186D; 23015C0187D; 23015C0190D; 23015C0195D; 23015C0277D; 23015C0279D; 23015C0281D; 23015C0282D; 23015C0283D; 23015C0284D; 23015C0287D; 23015C0291D; 23015C0292D; 23015C0294D; 23015C0301D; 23015C0303D; 23015C0305D; 23015C0310D; 23015C0311D; 23015C0312D; 23015C0313D; 23105C0314D; 23105C0316D
Westport Island	Applicable FIRMs (last dated July 16, 2015): 23015C0329D; 23015C0331D; 23015C0332D; 23015C0333D; 23015C0336D; 23015C0337D; 23015C0338D; 23015C0339D; 23015C0341D; 23015C0343D; 23015C0426D; 23015C0427D

Whitefield	Applicable FIRMs (last dated July 16, 2015): 23015C0020D; 23015C0040D; 23015C0045D; 23015C0110D; 23015C0120D; 23015C0130D; 23015C0131D; 23015C0133D; 23015C0140D; 23015C0235D; 23015C0255D
Wiscasset	Applicable FIRMs (last dated July 16, 2015): 23015C0229D; 23015C0235D; 23015C0240D; 23015C0243D; 23015C0244D; 23015C0245D; 23015C0265D; 23015C0326D; 23015C0327D; 23015C0328D; 23015C0329D; 23015C0331D; 23015C0333D; 23015C0336D; 23015C0337D

In addition to the FIRMs listed above, the Lincoln County Regional Planning Commission created a Google Earth based version of the FEMA Flood Insurance Rate Maps, which went live on July 16, 2015. The special flood hazard areas shown on these maps are areas that are susceptible to the 1% Annual Chance Flood (i.e., the 100-year storm). The maps include each town's FIRM and town's parcel layer in Google Earth format.

Municipal Survey – Location of Flood Prone Areas: Survey respondents were asked to identify areas in their municipality that are susceptible to damages from flooding and/or have had repeated damages (such as road overtopping, culvert damages, coastal erosion, etc.). Respondents were also asked to list out possible specific actions for the County (as a whole) and their town to undertake in the susceptible areas to flood damage. Refer also to prioritized mitigation actions listed in Elements C4-C5.

The following is a summary of areas that could be subject to flooding and/or have had repeated flood damages in specific jurisdictions, as identified in the Lincoln County Hazard Mitigation Planning Survey, 2021. The below table also includes responses received during the Public Comment Period for the LCHMP.

County-Wide	**Potential County-Wide Actions**: "Sea level rise; flash floods" "Continue mitigation efforts to eliminate flooding as much as possible" "Ed. & Awareness Programming for community on use of Cost Benefit Analysis to assess Sea Level Rise Mitigation vs. Emergency Response costs" "Assistance with Project Scoping & Gathering Engineering Concepts to Mitigate Sea Level Rise Impacts on Wharfs" "An awareness program between NOAA or other climatologist to begin advising and/or assisting in preparing for future climate impacts" "Don't just repair after floods, engineer for next 100 year storm" "Local plans or regulations" "Structure/infrastructure projects" "Natural systems protection" "Education and awareness" "Elderly/Disabled. Access: Roads with know issues of downed trees/flooding/ice. The unknown population: Seasonal residents & workers who may not be known to "live" here. How to reach them?" – Public Comment

Alna	**Locations**: *From Alna EMA Director Survey Response*: "Rabbit Path, Rte. 194, Rte. 218, Cross Road at hydrant." *From Anonymous Alna Resident No. 1 Survey Response*: "Head Tide Road, near former Pardo residence, is susceptible to flooding in extreme events (ice dam is most frequent), as are some segments of Route 218." **Possible Specific Actions**: *From Alna EMA Director Survey Response*: "Re-engineer roads" *From Anonymous Alna Resident No. 1 Survey Response*: "Structure/infrastructure projects."
Boothbay	**Locations**: *From Boothbay Town Manager Survey Response*: "Shore Road, East Boothbay" *From Anonymous Boothbay Resident No. 1*: "Adams Pond" **Possible Specific Actions**: *From Boothbay Town Manager Survey Response*: "Repaved this year (seasonal overtopping)" *From Anonymous Boothbay Resident No. 1 Survey Response*: "Natural systems protection".
Boothbay Harbor	**Locations**: *From BBH Sewer District's Survey Response*: "The 2017 Wastewater Facilities Sea Level Rise and Storm Surge Impact Assessment, 2017, identified several areas of potential impact and isolation within the FEMA 100-year coastal flood zone. The Assessment findings are based on the 100-year base flood elevation plus 3 feet due to sea level rise and from potential storm surge. The following areas have been identified: 1) WWTP and Pump Station 6 at 27 Sea Street, Boothbay Harbor 2) Pump Station 2, Atlantic Avenue, Boothbay Harbor 3) Pump Station 3, Western Avenue, Boothbay Harbor 4) Pump Station 7, Footbridge Area, Byway, Boothbay Harbor 5) Pump Station 12, Roads End, Boothbay Harbor 6) Pump Station 13, Factory Cove Road, Boothbay Harbor 7) Pump Station 15, Breakwater Road, Boothbay Harbor 8) Collection System Manholes, Associated with above Pump Station, Boothbay Harbor. **Possible Specific Actions**: *From BBH Sewer District's Survey Response*: "Local plans or regulations; Structure/infrastructure projects; Natural systems protection; Education and awareness programs"
Bremen	**Locations**: *From Town Selectman Survey Response*: "Properties on Medomak River, Biscay Pond, Pemaquid Pond, McCurda Pond, Route 32 in Bremen, Muscongus Road" **Possible Specific Actions**: *From Town Selectman Survey Response*: "Ditching"
Bristol	**Locations**: *From Town Administrator Survey Response*: "Coastal: Pemaquid Beach Area; West Shore Road at Pemaquid Point." "Inland: Route 130 (Bristol Road) at foot of Hunter's Hill; Carl Bailey Road through marsh; Splitrock Road thru marsh." **Possible Specific Actions**: *From Town Administrator Survey Response*: "Structure/infrastructure projects – raising roads, improved culverts; Coastal rip rap protection; Education and awareness"

Damariscotta	**Locations**: *From EMA Director Survey Response*: "Schooner Street, Church Street, Back Meadow Road, Egypt Road" **Possible Specific Actions**: *From EMA Director Survey Response*: "Structure/infrastructure projects"
Edgecomb	**Locations**: *None listed by Anonymous Edgecomb Resident No. 1* **Possible Specific Actions**: *From Anonymous Edgecomb Resident No. 1 (identified as fire officer and deputy EMA Director)*: "Education and awareness programs."
Monhegan Island Plantation	**Locations**: *From EMA Director Survey Response*: "Monhegan Avenue/Tribler Road Intersection & Drainage along Monhegan Avenue from Lighthouse Hill Road to drainage downhill of Monhegan Library; Monhegan Breakwater; Monhegan Wharf; Bog Meadow Aquifer; Village area, in particular between Monhegan Harbor and Bog Meadow Aquifer from Fish Beach Road to Swim Beach Lane (Reference: 12/31/19 Resiliency Study by Baker Design Consultants)." **Possible Specific Actions**: *From EMA Director Survey Response*: "Replace/Upsize culverts at Monhegan Avenue/Tribler Road Intersection & Drainage along Monhegan Avenue; Extend and Elevate Breakwater; Elevate & Stabilize Monhegan Wharf surface; Obtain engineers evaluation of any other vulnerabilities needing to be addressed at Monhegan Wharf due to Sea Level Rise, increased intensity of coastal storms, and other causes of coastal flooding; Use Education & Awareness Program to communicate flooding hazard and costs to Community; Employ Flood Prevention between Bog Meadow Aquifer & Monhegan Harbor ((1) Installing tidal check valve and subsurface stormwater improvements including resetting culvert and installing catch basin, outfall pipe and riprap and elevate nearby structures (2) Elevate & Stabilize Monhegan Avenue roadway & corridor and/or construct flood wall and opening gate)" *From Anonymous Monhegan Resident No. 1 Survey Response*: "Structure/infrastructure projects"
Somerville	**Locations**: *From EMA Director Survey Response*: "Most of our gravel roads are susceptible in varying degrees to overtopping or hillside ditch erosion. Some areas contribute to siltation in Damariscotta and Sheepscot Watershed". **Possible Specific Actions**: *From EMA Director Survey Response*: "To assist our Road Commissioner in creating additional plans and possible enforceable regulations concerning drainage or discharge in impacted locations".
South Bristol	**Locations**: *From EMA Director Survey Response*: "Split Rock Road east of Sproul Road; cannot put big enough culverts because of ledge". **Possible Specific Actions**: *From EMA Director Survey Response*: "Raise road in area of flooding".
Southport	**Locations**: *None listed by Anonymous Southport Resident No. 1* **Possible Specific Actions**: *From Anonymous Southport Resident No. 1*: "Natural systems protection"

Waldoboro	**Locations**: *From EMA Director/Deputy Director Survey Response*: "Although Waldoboro is a coastal community with tidal influence in the lower part of the Medomak River, the town is somewhat protected from coastal erosion and the impacts of storm surge from a large ocean storm. However, due to its hilly terrain and numerous creeks and stormwater runoffs, there have been many areas that have had flooding damages. Roads with repeated damages include: Duck Puddle Road, Orff's Corner Road, Winston Road, Jackson Road, Storer Mountain Road, Reef Road, Quarry Road, Wagner Bridge Road, Clary Hill Road, Cross Street, Feyler's Corner Road, Flanders Corner Road, Old County Road, Wagner Bridge Road." **Possible Specific Actions**: *From EMA Director/Deputy Director Survey Response*: "Specific Actions are contained in the Waldoboro Emergency Operation Plan" *From Anonymous Waldoboro Resident No. 1 Survey Response*: "Structure/Infrastructure projects." *From Anonymous Waldoboro Resident No. 2 Survey Response*: "Structure/infrastructure projects." *From Anonymous Waldoboro Resident No. 3 Survey Response*: "Local plans or regulations". *From Anonymous Waldoboro Resident No. 4 Survey Response*: "Natural systems protection." *From Anonymous Waldoboro Resident No. 5 Survey Response*: "Education and awareness" *From Anonymous Waldoboro Resident No. 6 Survey Response*: "Structure/infrastructure projects"

Westport Island	**Locations**: *From EMA Director Survey Response*: "The following Town road/waterway crossings are susceptible to road overtopping that may evolve with sea-level rise and during storm surge based on experience and predictive models used for rising sea levels and storm surge: Squam Creek Causeway, West Shore Road (included in 2016 Plan) Heal Pond Causeway, West Shore Road Squam Creek Crossing, Post Office Road Doggett Road, because of beaver activity, and water on both sides is very susceptible to flooding in any rainwater event. And part of East Shore Road and West Shore Road just south of the Post Office Road junction as reflected in the previous plan continue to experience erosion and susceptibility to flooding/over topping. Westport also has 18.48 miles of private roads, almost all of which are not paved, that do not meet basic road construction standards, making them susceptible to flooding damage from adverse weather conditions. Sometimes degradation of these roads impacts state-aid and town roads." **Possible Specific Actions**: *From EMA Director Survey Response*: "The 2019 Westport Island Comprehensive Plan has identified the previously-noted Town road/waterway crossings as projects for long-term transportation planning. Past assessments of the West Shore Road Squam Creek Causeway by FEMA and MEMA have indicated that they would only provide mitigation funding for a box culvert at that location. A box culvert was also the solution favored by the Comprehensive Planning Committee for both the Squam Creek and Heal Pond crossings because fish ladder features could be incorporated in the design; thus, a mitigation project could serve the dual purposes of flood mitigation and natural systems protection. The Comprehensive Planning Committee recommended a variety of strategies to improve the resiliency of state, state-aid, and town roads, including: a Town Road Improvement Plan; updating a long-range plan to improve flood resilience of at-risk transportation infrastructure such as the Squam Creek and Heal Cove Causeways and the Post Office Road Squam Creek crossing; a system to track maintenance and costs related to flooding and other climate impacts; and review of emergency access routes and their vulnerability to extreme weather events. Building up the roadbed and installation of a larger wider culvert would reduce and likely eliminate the flooding on Doggett Road. A digital sign at the head of the island would allow public safety broadcasting of closed roads due to flooding. A map with all town and private roads identified with any associated flooding and other problems relating to access would be a good resource for emergency response personnel and for planning."

Wiscasset	**Locations**: *From Public Works Director Survey Response:* "Old Ferry Road culvert" **Possible Specific Actions**: *From Public Works Director Survey Response*: "Structure/infrastructure projects. Replacement of culvert".

Extent (Severity) of the Hazard: Flood damages to roads, bridges and ditches continue to be the most common occurrence throughout Lincoln County, especially in heavy rain events (> 3" – 5" in 24 hours). Depending on the saturation level of the ground at the time of the event and the duration of the storm, the extent of damages can vary from a few overwhelmed culverts to major road washouts throughout the county. Note the range in severity of flooding events in the 'Historical Summary of Major Flood Events in Lincoln County since 1973' table.

The extent of the flooding hazard under the various sea-level rise scenarios has not been determined for individual roads and culverts. This would have to be calculated on a case-by-case basis.

Nature of the Hazard from Coastal Flooding: The gradual rise in sea level is having a profound effect on the nature of coastal flooding. The sea is conservatively projected by the Maine Climate Council's Scientific Subcommittee to rise by 1.5 ft. by 2050 and 3.9 ft. by 2100. Along the Lincoln County coast, if the 10-year and 100-year storm elevations are only one foot apart, a sea level rise of one (1) foot means a storm having a 1% chance of occurring in any one year (the 100-year storm) at the original elevation will have a 10% chance of occurring in any one year (the 10-year storm) at the new elevation. As a result, more homes, businesses, public infrastructure (such as roads), and entire communities will be subject to more devastating coastal storms, as well as coastal erosion, on a more frequent basis. There is also concern in the scientific community that climate change may be increasing the intensity of coastal storms.

Wave action generated by winter storms, particularly nor'easters, is the most threatening cause of coastal flooding. The Patriot's Day storm which occurred on April 16, 2007, was a nor'easter that caused significant damage throughout Lincoln County.

Dam Failure Risk: 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 although it can and does occur. In 2004, the Meadow Cove Dam in Boothbay breached, causing about $30,000 in damages. It has since been repaired. In 2005, during the April flooding events, the Sherman Lake Dam in Newcastle washed out. No lives or buildings were lost. The Dam was not replaced. Meserve Dam in Jefferson breached in 2007 during the Patriot's Day Storm. Repairs took place in 2011/2012[13].

[13] https://lcnme.com/currentnews/jefferson-to-repair-meserve-mill-dam/

More recently, Clay Lake Dam in Whitefield/Jefferson breached in 2011 during Hurricane Irene[14]. A lake association was created and is in the process of rebuilding/repairing the structure. The breach did not cause any damage downstream, just damages to the dam itself[15].

Maine law, which is consistent with federal law, classifies the hazard potential of dams as High, Significant, or Low. If they fail, High Hazard dams could cause loss of life; Significant Hazard dams could cause significant property damage; and Low Hazard dams would generally cause damage only to the owner's property. Therefore, it is possible a small (low head) dam located above a large community could be rated High Hazard while a structurally larger dam sited in an unpopulated area could have a Low Hazard potential.

Most Lincoln County dams are located at the outlets of lakes and ponds and are small in size. The State of Maine maintains an inventory and condition rating for all dams in the State. Based on the review of this inventory, there are thirty-nine (39) dams in Lincoln County, including eleven (11) No Hazard dams, nineteen (19) Low Hazard Dams, and nine (9) Significant Hazard Dams. No High Hazard Dams exist in Lincoln County. The following table provides a summary of the Significant Hazard Dams in Lincoln County.

Lincoln County Significant Hazard Dams			
MEMA ID/H/S	DAM NAME	DAM LOCATION	DAM OWNER
00455	Appalachee Pond	Boothbay Harbor	Appalachee Village Association
00454	Southport Water Supply	Southport	Southport
96163	Lower Great Brook	Damariscotta	Great Salt Bay Sanitary District
96162	Heart Pond	Damariscotta	Great Salt Bay Sanitary District
96164	East Branch	Damariscotta	Great Salt Bay Sanitary District
96165	Great Brook	Damariscotta	Great Salt Bay Sanitary District
00746	New Pond	Damariscotta	Great Salt Bay Sanitary District
00361	Meadow Cove	Boothbay Harbor	Joseph Paolilo
00791	Merserve	Jefferson	Town of Jefferson

Source: MEMA Dam Safety Team

With respect to the significant hazard dams shown above, Boothbay Harbor, Damariscotta, Jefferson, and Southport would be most at risk from a dam breach since release of impoundments of those dams could cause infrastructure damages, especially to downstream roads and bridges.

Previous Occurrences: The following table contains a summary of floods that have occurred in Lincoln County, as reflected primarily in Presidential Disaster Declarations.

[14] https://bangordailynews.com/2018/10/14/news/mainers-now-own-the-dam-that-ruined-their-lake-heres-how-they-plan-to-bring-it-back/
[15] Supporting information on historic dam breaches was provided by the MEMA Dam Safety Program.

Historical Summary of Major Flood Events in Lincoln County Since 1973			
MONTH OF EVENT	YEAR	DAMAGES	DECLARATION
December	1973	---	N/A
February 8	1978	(*Statewide*) High winds, tidal surge, coastal flooding	Presidential FEMA-550-DR-ME
January	1986	Roads, bridges, dams, clean up	N/A
April 1	1987	Major damage to homes, businesses, public buildings (town halls, fire stations, libraries) parks and recreation areas, agricultural equipment and livestock; the pollution closed clam beds downstream and severely damaged water and sanitation district facilities; erosion to river banks	*Presidential* FEMA-788-DR-ME
April (The "Easter Flood")	1993	Heavy rains, snow melt and ice jams damaged dirt roads and culverts damage, exceeding the annual road repair	*Presidential* FEMA-988-DR-ME
March 29- May 3	2005	Severe storms, flooding, snow melt, and ice jams	*Presidential* FEMA-1591-DR-ME
May 13	2006	Flooding	*Presidential* FEMA-1644-DR-ME (This storm was included in the 2016 HazMit Plan but was only declared in York County)
March 16-18	2007	Flooding	*Presidential* FEMA-1691-DR-ME
April 15-23 (The "Patriot's Day Storm")	2007	Severe storms and inland and coastal flooding	*Presidential* FEMA-1693-DR-ME
April 28-May 14	2008	Severe storms and flooding	*Presidential* FEMA-1755-DR-ME
December 11 – 29	2008	Severe winter storm and flooding	*Presidential* FEMA-1815-DR-ME
June 18-July 8	2009	Severe storms, flooding, landslides	*Presidential* FEMA-1852-DR-ME
February 23 – March 2	2010	Severe winter storms, flooding	*Presidential* FEMA-1891-DR-ME
October 29-November 1	2017	Severe storm and flooding	*Presidential* FEMA-4354-DR-ME
July 14	2020	Severe thunderstorms and flash flood	*No declaration*

Source: FEMA website and MEMA records

Patriot's Day Storm, April 16, 2007. The Patriot's Day Storm of 2007 was the most damaging storm to hit Lincoln County in recent years. According the Gulf of Maine Ocean Observing System website, the Patriot's Day Storm of 2007 will be long remembered for its meteorological significance and devastating power. Violent waves destroyed homes, businesses, coastal roads and beaches, while

forceful winds tore down power lines, leaving many residents in the dark for days. Portland had a peak wind of 59 mph measured on April 16th. An abnormally high spring tide plus a storm surge of 3 feet (2.72 feet at the Portland tide gauge) produced a high tide of 13.28 feet (the 7th highest tide measured since the early 1900s).

The National Weather Service's models had predicted a large snowstorm the week before that didn't occur. Instead, the jet stream carried the storm's energy over New England, dropping five to eight inches of rain along the coast, resulting in a significant coastal flooding event. During the Patriot's Day storm, there were four high tide cycles in which the water was near or above flood stage and the waves were greater than 10 feet in height. This combination caused the tremendous amounts of damages seen during the storm.

Flood Losses in Dollars by Municipality: 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.

Historical Summary of Major Flood Events in Lincoln County since 1987										
	FLOOD DISASTER NUMBER; YEAR; DAMAGES									
	#788 1987	#988 1993	#1591 2005	#1691 2007	#1693 2007	#1755 2008	#1815 2008	#1859 2009	#1891 2010	#4354 2017
Alna	0	0	$30,149	0	$24,871	0	0	0	0	$7,906.37
Boothbay	0	0	0	0	$151,713	0	0	0	0	$68,772.16
Boothbay Harbor	0	0	$8,281	0	$73,620	0	$61,045	0	$16,839	$7,292.05
Bremen	0	0	$5,455	$1,404	$32,971	$10,255	$10,942	0	$15,882	$7,951.78
Bristol	0	0	$17,439	$7,783	$148,137	$51,260	$20,618	0	$15,616	$12,511.79
Damariscotta	0	0	0	0	$38,394	$12,399	$4,149	0	$2,327	$18,718.34
Dresden	$4,325	0	$18,893	0	$34,355	0	$6,270	$22,614	$23,854	$26,702.90
Edgecomb	0	0	0	0	$98,908	$37,839	$20,476	$65,882	$35,379	$32,770.08
Jefferson	0	$344,108	$14,217	$5,856	$12,105	$14,071	$14,729	$32,773	0	$4,935.11
Monhegan Island Plantation	0	0	$13,050	0	$28,741	0	0	0	0	0
Newcastle	0	0	$49,416	0	$178,185	$33,850	$14,961	$134,709	$13,870	$25,041.49
Nobleboro	0	0	$10,878	0	$4,472	0	$18,892	0	$8,455	$17,929.00
Somerville	$12,341	0	$99,868	0	$48,086	0	0	0	0	$17,759.21
South Bristol	0	0	0	$1,461	$54,290	0	0	0	$15,818	0
Southport	0	0	0	0	$13,385	0	0	0	$11,026	$8,232.49
Waldoboro	$17,305	0	0	$24,466	$78,128	$96,706	$135,558	$22,151	$31,472	$50,063.31
Westport Island	0	0	$32,970	0	$18,682	0	$9,842	0	$36,389	$22,409.18
Whitefield	0	0	$50,853	0	$55,144	$17,820	0	0	0	$5,796.51
Wiscasset	0	0	0	0	$11,448	0	$59,929	$34,649	$10,409	$63,671.88
Lincoln County	**$33,971**	**$344,108**	**$351,467**	**$40,969**	**$1,105,635**	**$274,200**	**$377,411**	**$312,778**	**$250,880**	**$419,670.01**

Source: Maine Emergency Management Agency

Probability of Occurrence: As reflected in the Presidential Disaster Declarations since 1987 referenced above, it can be expected that a major flooding event will cause mostly road damages in Lincoln County at least once every five to ten years. Flooding from storm surge could become more frequent than that depending on the rate at which sea level rise occurs during the next decade.**SEVERE SUMMER STORM EVENTS**

Severe summer storm damage typically involves downed overhead utility lines, flooding from heavy rains, debris in the roads, and often erosion, particularly along the immediate coast.

General Definition: Severe summer storm events are violent weather phenomena producing winds, heavy rains, lightning, and hail, which can cause injuries and destruction of property, crops, and livestock. Severe summer storms generally occur between June and early October each year.

Types of Severe Summer Storm Events: There are several different types of severe summer storms in Lincoln 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". Please refer to the Saffir-Simpson hurricane scale below. Lincoln County has not suffered a direct hit with a Category 1 or greater hurricane since 1954.

Tropical Storm: An intense tropical cyclone with wind speeds less than 74 miles an hour. Tropical storms are very common in Lincoln County and sometimes are the result of hurricanes that lose strength by the time they get to the Maine coast.

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°F in a split second. The rapid heating and cooling causes thunder.

Thunderstorm: A thunderstorm is formed from a combination of moisture, rapidly rising warm air, and a force capable of lifting air such as a warm or cold front, or a sea breeze. All thunderstorms have lightning and can occur singly, in clusters, or in lines.

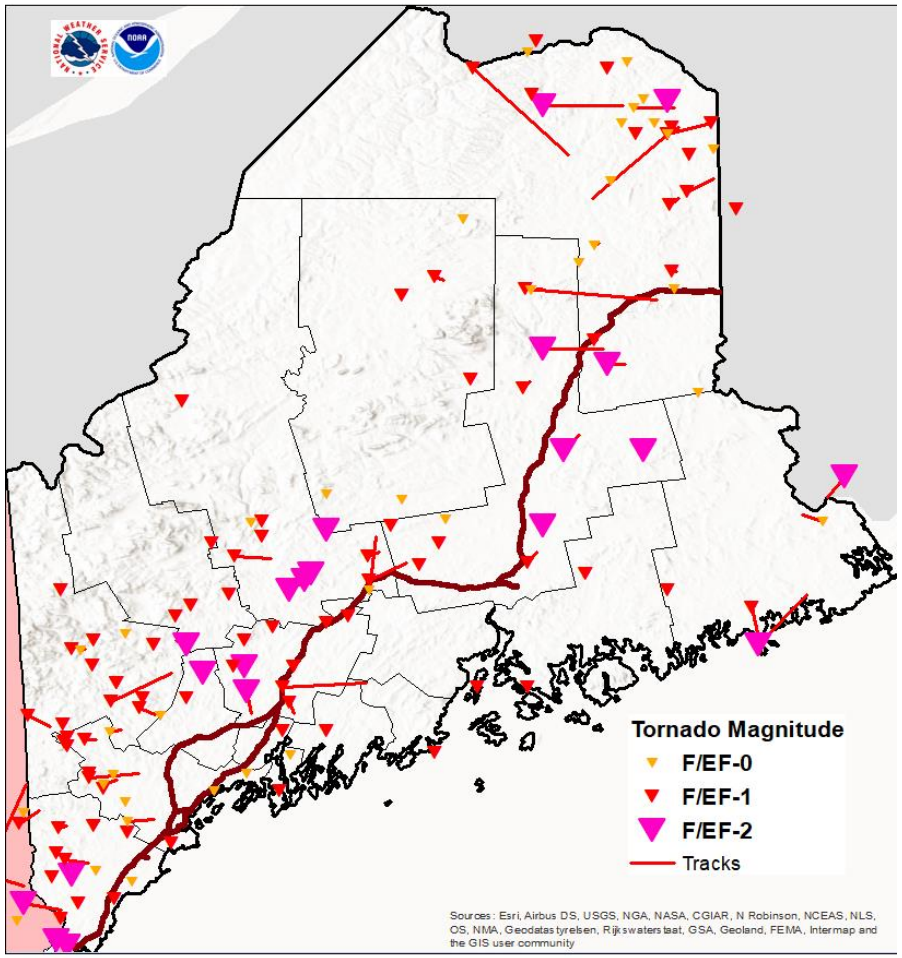
Tornado: A violently rotating column of air extending downward from a thunderstorm to the ground. The distinctive slender, funnel-shaped cloud, with wind velocities of up to 300 miles per hour at the central core, destroys everything along its narrow ground path.

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.

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		

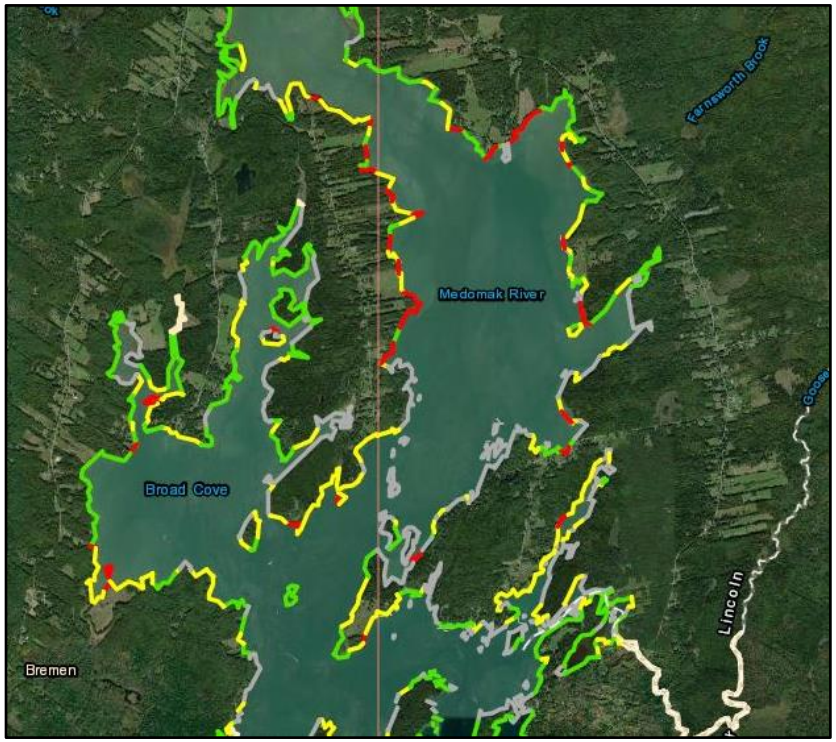
Tropical Storm	39-73	34-64
Tropical Depression	0-38	0-33

Maine Tornado Reports 1950-2018



Source: National Weather Service, Gray Maine Forecasting Office

Location of Severe Summer Storm Events: Lincoln County is subject to severe summer storm events. The entire County is very susceptible to severe coastal summer storms, especially from high winds involved in such a storm. The entire County is vulnerable to one or more severe summer storms each year, usually in the form of thunderstorms. Within Lincoln County, severe summer storms have the most impact on coastal shoreline areas, including harbor areas. Erosion evidenced in Lincoln County has been principally the result of severe storms. The location of coastal erosion and landslides (though rare) is found in low-lying shoreline areas, where flooding can also often occur. Below is an image from the Maine Geological Survey Coastal Bluffs and Landslides Map[16]. A number of areas along the Medomak River in Bremen and Waldoboro are classified as 'Unstable' (shown in yellow) and 'Highly Unstable' (shown in red).



Source: Maine Geological Survey Coastal Bluffs and Landslides Map

In addition, refer to the Hazus hurricane report in the Assessing Vulnerability section and the municipal base maps for geospatial information on the specific location and extent of hurricane wind and storm surge hazards in participating jurisdictions. The full report is included in Appendix F of this document.

[16] Maine Geological Survey (2021). Coastal Bluffs and Landslides Map. https://maine.maps.arcgis.com/apps/webappviewer/index.html?id=9f0794fa0a554c6b8afc0e005765dd08. Accessed on 08/30/2021.

Municipal Survey – Location of Areas Susceptible to Severe Summer Storms: Respondents were asked to identify areas in their municipality that are susceptible to severe summer storms, such as power outages, debris removal, etc. Survey respondents were also asked to list out possible specific actions for the County (as a whole) and their town to undertake in the susceptible areas to summer storm damage.

The following is a summary of areas that are susceptible to sever summer storms, as identified in the Lincoln County Hazard Mitigation Planning Survey 2021.

County-Wide	**Potential County-Wide Actions:** "Assistance to Fire Service for creating water supply availability during high wind or tornadic activity" "CMP trimming completed 2020. Identifying special needs residents. Proper generator use." "Pressure utilities to place wires underground" "Towns work closely with County EMA" "Encourage aggressive tree trimming projects in the vicinity of utility lines. Change legislation to increase trimming distances." "Local plans or regulations" "Education and awareness programs" "Structure/infrastructure projects"
Alna	**Locations**: *From EMA Director Survey Response*: "Flood areas as previously noted (i.e., Rabbit Path, Rte. 194, Rte. 218, Cross Road at hydrant)" **Possible Specific Actions:** *From Anonymous Alna Resident No. 1 Survey Response*: "Education and awareness programs."
Boothbay	**Locations**: *None listed by Anonymous Boothbay Resident No. 1* **Possible Specific Actions**: *From Anonymous Boothbay Resident No. 1 Survey Response*: "Education and awareness programs"
Boothbay Harbor	**Locations**: *From BBH Sewer District Survey Response*: "All 20 pump stations are susceptible to extended power outages during storm events. There are 5 permanent emergency generators in place. All stations have manual transfer switches and standardized emergency power plugs to match the District's portable generators." **Possible Specific Actions**: *From BBH Sewer District Survey Response*: "Infrastructure projects: Install permanent emergency generators at: 1) Atlantic Avenue Station (PS 2) 2) Mill Cove Station (PS 3) 3) Footbridge Station (PS 7) 4) Roads End Station (PS 12) 5) Atlantic Avenue Extension Station (PS 14) 6) Lobster Cove Road Station (PS 16) 7) Emery Lane Station (PS 17)."

Bremen	**Locations**: *From Town Selectman Survey Response*: "Entire Town." **Possible Specific Actions**: *From Town Selectman Survey Response*: "Tree trimming."
Bristol	**Locations**: *From Town Administrator Survey Response*: "Power outages common in these areas: • Pemaquid Harbor Road • South side of Round Pond • Old County Road • Chamberlain & Long Cove Point • Pemaquid Point • Benner/Fogler Roads • Carl Bailey Road • Southside Road, New Harbor • Pemaquid Trail" **Possible Specific Actions**: *From Town Administrator Survey Response*: "CMP need to bury utility lines in vulnerable areas."
Damariscotta	**Locations**: *From EMA Director Survey Response*: "Lessner Road Power Line." **Possible Specific Actions**: *From EMA Director Survey Response*: "Generators. [Education and awareness programs on] down power lines!"
Edgecomb	**Locations**: *None listed by Anonymous Edgecomb Resident No. 1* **Possible Specific Actions**: *From Anonymous Edgecomb Resident No. 1 Survey Response (identified as fire officer and deputy EMA Director)*: "Education and awareness programs"
Monhegan Island Plantation	**Locations**: *From EMA Director Survey Response*: "Lighthouse Hill to Monhegan Avenue/Tribler Road Intersection & Drainage along Monhegan Avenue from Lighthouse Hill Road to drainage downhill of Monhegan Library – erosion from intense summer rain & thunderstorms." **Possible Specific Actions**: *From EMA Director Survey Response*: "Pro-active clearing of ditches and drainages along and downhill of steep roadways. Quick fill-in of eroded areas. Maintenance of emergency supply of road materials."
Somerville	**Locations**: *From EMA Director Survey Response*: "All areas of Town are susceptible including areas currently included in our tree and brush removal programs. Road side brush and vegetative growth removal is currently addressed under our Road Commissioner's budget constraints." **Possible Specific Actions**: *From EMA Director Survey Response*: "Road commissioner's ongoing plans for culverts ditching and erosion control. Making the public aware of the importance regarding inadvertent altering of natural or created infrastructure."
South Bristol	**Locations**: *From EMA Director Survey Response*: "Entire town is susceptible to trees blocking roads and trees taking down power lines."

	Possible Specific Actions: *From EMA Director Survey Response*: "Ensure Fire Dept. is ready to respond to trees in road + downed power lines. Keep supply of barricades to close roads. Coordinate and prioritize response by CMP through County EMA."
Southport	**Locations**: *None listed by Anonymous Southport Resident No. 1* **Possible Specific Actions**: *From Anonymous Southport Resident No. 1 Survey Response*: "Education and awareness programs"
Waldoboro	**Locations**: *From EMA Director Survey Response*: "The entire town is susceptible to the damage caused by Severe Summer Storms. There are numerous trees that line almost 100 miles of road in Waldoboro. Most if not all roads in Waldoboro are susceptible to debris removal due to heavy winds and lightning strikes. A direct strike from a tropical storm (especially when leaves are still on the trees) would bring wide spread damage to the area. A category 1-2 Hurricane would devastate the area and potentially render some areas inaccessible for weeks." **Possible Specific Actions**: *From EMA Director Survey Response*: "Specific Actions are contained in the Waldoboro Emergency Operation Plan." *From Anonymous Waldoboro Resident No. 1 Survey Response*: "Education and awareness programs." *From Anonymous Waldoboro Resident No. 2 Survey Response*: "Education and awareness programs." *From Anonymous Waldoboro Resident No. 3 Survey Response*: "Local plans or regulations." *From Anonymous Waldoboro Resident No. 4 Survey Response*: "Education and awareness programs." *From Anonymous Waldoboro Resident No. 5 Survey Response*: "Education and awareness programs." *From Anonymous Waldoboro Resident No. 6 Survey Response*: "Structure/Infrastructure projects."
Westport Island	**Locations**: *From EMA Director/Deputy Director Survey Response*: "As with winter storms, all of Westport Island is susceptible to power outages in wind storms and severe summer storms. With few exceptions, the island's power relies on overhead power lines which are more susceptible to damage than underground lines. As noted above, one main power line from Wiscasset spans a tree-covered island with shallow soil/root systems on ledge – power lines are at the mercy of falling branches, snapped and uprooted trees, and broken power poles in every major storm. Downed trees can also block roadways. With the exception of West Shore, East Shore, Bridge, Lord, and parts of North End Road, all roads on Westport are 'dead-end' roads off the Main Road – which also dead ends at the end of the island. We have a high percentage of elderly residents that can get 'trapped' on obstructed roadways. Some of these residents also rely on power for medical equipment; and all rely on power for their well pumps." **Possible Specific Actions**: *From EMA Director/Deputy Director Survey Response*: "Again, a vegetation management plan to expand upon Central Maine Power's vegetation management efforts along roadways and power line/transformer corridors would be beneficial. A small automatic generator – or hook up to the existing generator at the Town Office, if a possibility – is needed for the Sand and Salt Shed during power outages. The door can be opened

	manually, but it takes considerable strength and time to open and to close. Additionally, there are no lights or exhaust fans. A digital sign at the head of the island would help public safety broadcast of 'comfort services' available at the fire station during prolonged power outages, as well as closed roads due to downed trees and power lines. A digital road map which allows population of road conditions during emergency events and could be posted on the Town website/Facebook page would be a valuable resource for Town administrators and residents during emergency events."

Extent (Severity) of the Hazard: In the summer, southwest to southerly winds may become quite prevalent across Lincoln County. Southerly winds prevail along the coast during the summer months due to the frequent formation of sea breezes. Severe summer storms can bring high winds (>50 mph) that can fell trees and branches onto power lines, causing power and/or communication outages. Heavy rains (>2 inches in 1 hour period) often accompany thunderstorms and can result in flash flooding or erosion. When hail is greater than ½ inch, it can cause crop damage for farmers and backyard gardeners. Lightning strikes can start fires. Any of these weather events can cause personal injury or property damage.

The impact of summer storms in Lincoln County is usually restricted to flooding caused by the significant amounts of moisture these storms can carry, as well as high-wind damages to individual properties.

Previous Occurrences: The table below contains a summary of severe summer storms that have occurred in Lincoln County. *(NOTE: Flooding during the spring is often a result of snowmelt, which may be from winter storms.)*

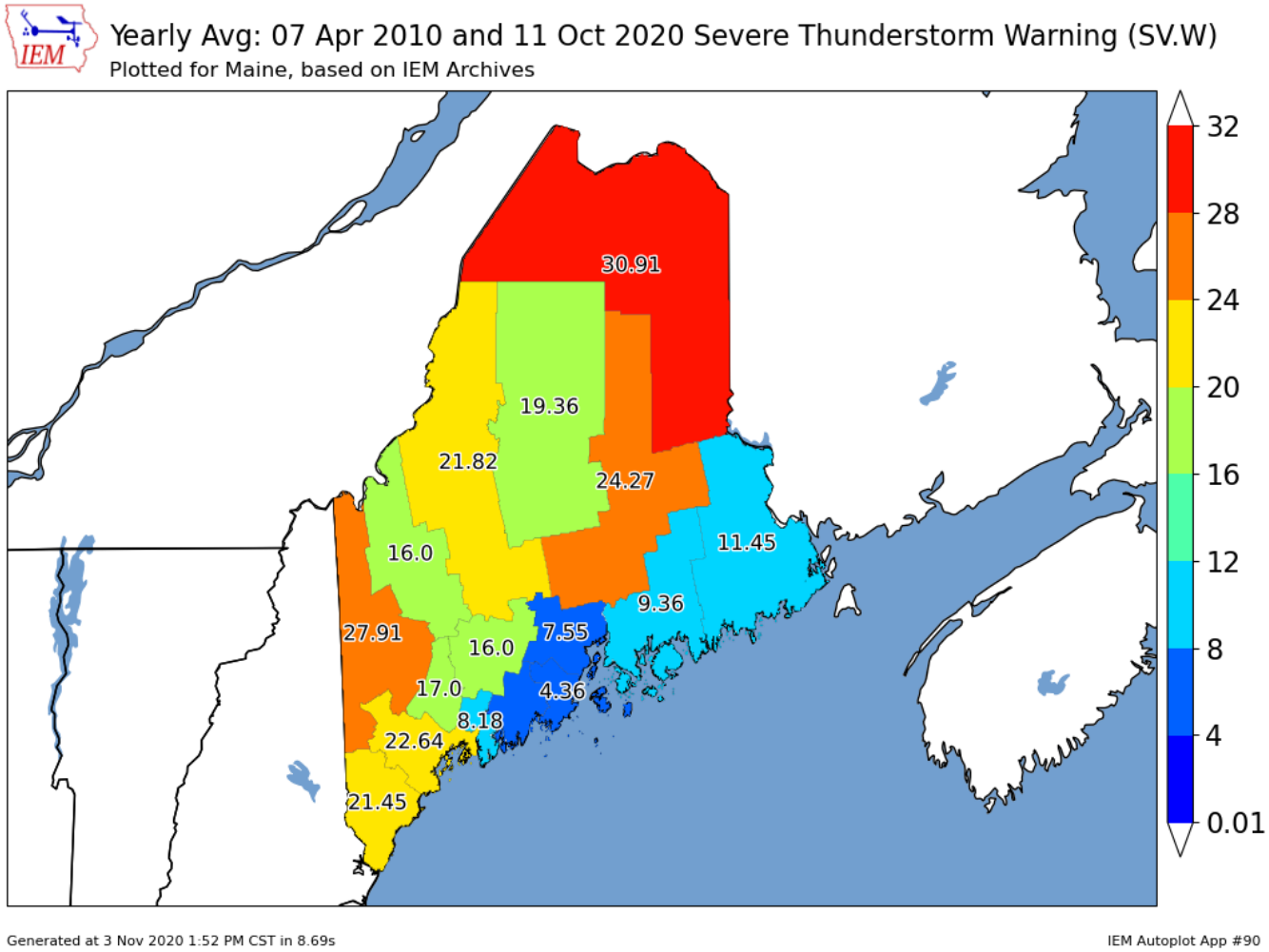
Historical Summary of Severe Summer Storm Events in Lincoln County				
MONTH OF EVENT	*YEAR*	*CATEGORY*	*DAMAGES*	*DECLARATION*
August 25 – September 1 "Carol"	1954	Category 1	Power outages, downed trees	SBA
September 2 - 15 "Edna"	1954	Category 1	Statewide flooding	*Presidential* #24
October 29 "Ginny"	1963	Category 2 (did not make landfall)	*(Statewide)*	---
September 6 "David"	1979	Tropical Storm	*(Statewide)* Minor damage	---
September "Diana"	1984	Tropical Storm (did not make landfall)	*(Statewide)* Coastal communities threatened	---
September 16 – October 2 "Gloria"[1]	1985	Tropical Storm (Cat 1 at landfall in NE, but	Power outages, downed trees	None

		downgraded to TS in Maine)		
August 16 – 20 "Bob"[1]	1991	Tropical Storm (Cat 1 at landfall in NE, but downgraded to TS in Maine)	Power outages, damage	*Presidential* FEMA-915-DR-ME
September 7 – 19 "Floyd"[1]	1999	Hurricane	---	*Presidential* FEMA-1308-DR-ME
April 28 – May 14	2008	Severe storms	Flooding	*Presidential* FEMA-1755-DR-ME[2]
June 18 – July 8	2009	Severe storms	Flooding and landslides	*Presidential* FEMA-1852-DR-ME[2]
August 27-29 Tropical Storm "Irene"	2011	Tropical Storm	*(Statewide)* Extensive flooding, power outages, debris cleanup from high winds	*Presidential* FEMA-4032-DR-ME
September 11-12	2013	Severe storms	Severe thunderstorm winds	*No declaration*
July 15	2014	Severe storms	Severe thunderstorms, wind damage, road blockage by debris	*No declaration*
October 30	2017	Severe storms	Severe wind damage	*No declaration*
September 6	2018	Severe storms	Severe thunderstorms, numerous downed trees	*No declaration*
June 28-30	2019	Severe storms	Hail, straight-line winds, tree/power line damage	*No declaration*
July 31	2019	Severe storms	Tree damage	*No declaration*
August 24-25	2020	Severe storms	Hail and extensive wind damage	*No declaration*

Notes:

1. Tropical storm by the time it passed through Lincoln County. Of the hurricanes listed in this table, only Hurricane Edna hit Lincoln County directly. For the other hurricanes listed, heavy rain, winds and flooding occurred, but not at hurricane-strength levels.
2. Flooding

Sources: FEMA/MEMA



Source: National Weather Service – Gray Forecasting Office

Probability of Occurrence: No probability studies are available for summer storms. However, based on past experiences, the County can expect thunder and lightning yearly. It is expected a severe storm will create damage in Lincoln County at least once every three years.

The County has not recorded a F2-5 tornado since 1950. Historically the probability of an F2-5 tornado is low and will not be considered further in the Plan.

SEVERE WINTER STORM EVENTS

Lincoln County is subject to severe winter storm events including "Northeaster" (nor'easter) winter storms, which occur most often between September and April of each year and produce significant precipitation (in the form of rain or snow), gale force winds, and coastal flooding. The entire County is susceptible to major snowfall events, with the northern half of Lincoln County typically receiving greater snowfall amounts. The County can also experience major ice storm events, as it did in January of 1998.

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.

General Definition: Severe winter weather conditions are distinguished by low temperatures, strong winds, and often large quantities of snow.

Types of Winter Storms in Lincoln County:

Blizzard: Sustained winds of 40 miles per hour (mph) or more of 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 traveling conditions. Sustained as frequent gusts of winds >=35mph with snow and blowing snow decreasing visibility to less and ¼ of a mile for three (3) or more hours.

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 public safety departments' response capability.

Ice Storms: Rain which freezes upon impact. Ice coating at least one-fourth inch in thickness is heavy enough to damage trees, overhead wires, and similar objects and to produce widespread power outage.

Nor'easter: Nor'easters are extra-tropical coastal storms that can produce tremendous amounts of precipitation and strong winds that can cause coastal flooding damage. 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 Storm: Frozen rain drops (ice pellets) which bounce when hitting the ground or other objects. Does not stick to objects, but in accumulated depths of two inches or more, produces hazardous driving conditions.

Location of Hazard: The entire county is subject to severe storms every winter.

Municipal Survey – Location of Areas Susceptible to Severe Winter Storms: Survey respondents were asked to identify areas in their municipality that are susceptible to severe winter storms, such as ice jams, power outages, etc. Respondents were also asked to list out

possible specific actions the County (as a whole) and their municipality to undertake in areas susceptible to damage from severe winter storms.

The following is a summary of areas that are susceptible to sever winter storms, as identified in the Lincoln County Hazard Mitigation Planning Survey 2015.

County Wide	**Potential County-Wide Actions:** "Pressure utilities to place wires underground." "CMP trimming completed in 2020. Identify special needs residents. Proper generator use." "Assistance to fire service for creating water supply availability during high wind or tornadic activity." "Towns work closely with County EMA." "Encourage aggressive tree trimming projects in the vicinity of utility lines. Change legislation to increase trimming distances." "Education and awareness programs" "Local plans or regulations" "Structure/infrastructure projects"
Alna	**Locations**: *From EMA Director Survey Response*: "Ice jams on 194" **Possible Specific Actions**: *From EMA Director Survey Response*: "Build up road" *From Anonymous Alna Resident No. 1 Survey Response*: "Education and awareness programs"
Boothbay	**Locations**: *None listed by Anonymous Boothbay Resident No. 1* **Possible Specific Actions**: *From Anonymous Boothbay Resident No. 1 Survey Response*: "Education and awareness programs"
Boothbay Harbor	**Locations**: *From BBH Sewer District Survey Response*: "All 20 pump stations are susceptible to extended power outages during storm events. There are 5 permanent emergency generators in place. All stations have manual transfer switches and standardized emergency power plugs to match the District's portable generators." **Possible Specific Actions**: *From BBH Sewer District Survey Response*: "Infrastructure projects: Install permanent emergency generators at: 8) Atlantic Avenue Station (PS 2) 9) Mill Cove Station (PS 3) 10) Footbridge Station (PS 7) 11) Roads End Station (PS 12) 12) Atlantic Avenue Extension Station (PS 14) 13) Lobster Cove Road Station (PS 16) Emery Lane Station (PS 17)."

Bremen	**Locations**: *From Town Selectman Survey Response*: "Entire Town" **Possible Specific Actions**: *From Town Selectman Survey Response*: "Tree trimming"
Bristol	**Locations**: *From Town Administrator Survey Response*: "Power outages – see summer storms." **Possible Specific Actions**: *None listed by Town Administrator*
Damariscotta	**Locations**: *None listed by EMA Director* **Possible Specific Actions**: *From EMA Director Survey Response*: "Generators. Be prepared – education and supplies."
Edgecomb	**Locations**: *None listed by Anonymous Edgecomb Resident No. 1* **Possible Specific Actions**: *From Anonymous Edgecomb Resident No. 1 (identified as fire officer and deputy EMA Director) Survey Response*: "Education and awareness programs"
Monhegan Island Plantation	**Locations**: *From EMA Director Survey Response*: "Monhegan Roads (downed trees)." **Possible Specific Actions**: *From EMA Director Survey Response*: "Property owner education re: pro-active clearing of dead and dying trees near roadways and making known availability of businesses providing cutting/clearing services." *From Anonymous Monhegan Resident No. 1 Survey Response*: "Structure/infrastructure projects"
Somerville	**Locations**: *None listed by EMA Director* **Possible Specific Actions**: *From EMA Director Survey Response*: "Tree trimming, culvert cleaning, ditching and roadway elevations."
South Bristol	**Locations**: *From EMA Director Survey Response*: "Entire town is susceptible to power outages. Roads blocked by trees." **Possible Specific Actions**: *From EMA Director Survey Response*: "Fire Department continue tree removal and closing roads where power lines are down coordinate CMP (priorities) through County EMA."
Southport	**Locations**: *None listed by Anonymous Southport Resident No. 1* **Possible Specific Actions**: *From Anonymous Southport Resident No. 1 Survey Response*: "Local plans or regulations".

Waldoboro	**Locations**: *From EMA Director Survey Response*: "As a coastal rural Maine community, Waldoboro has its share of snow and severe winter storms. Over the course of the last 5 years, Waldoboro has seen an increase in the number of severe storms. On average, 2-3 storms per year are experienced when power is interrupted for one day or more for at least 50% of the residents. The Medomak River bisects the town from North to South. There is history of an Ice Jam at the Route 1 Bridge that has moved the bridge from its foundation in the past. Interruption of traffic along Route 1 would cause significant challenges. There are numerous trees that line almost 100 miles of road in Waldoboro. Most if not all roads in Waldoboro are susceptible to debris removal due to ice/snow covered trees. **Possible Specific Actions**: *From EMA Director Survey Response*: "Specific Actions are contained in the Waldoboro Emergency Operation Plan." *From Anonymous Waldoboro Resident No. 1 Survey Response*: "Local plans or regulations" *From Anonymous Waldoboro Resident No. 2 Survey Response*: "Local plans or regulations" *From Anonymous Waldoboro Resident No. 3 Survey Response*: "Local plans or regulations" *From Anonymous Waldoboro Resident No. 4 Survey Response*: "Education and awareness programs" *From Anonymous Waldoboro Resident No. 5 Survey Response*: "Education and awareness programs" *From Anonymous Waldoboro Resident No. 6 Survey Response*: "Local plans or regulations"

Westport Island	**Locations**: *From EMA Director/Deputy Director Survey Response*: "All of Westport Island is susceptible to power outages in wind storms and severe winter storms. With few exceptions, the island's power relies on overhead power lines which are more susceptible to damage than underground lines. One main power line from Wiscasset spans a tree-covered island with shallow soil/root systems on ledge – power lines are at the mercy of falling branches, snapped and uprooted trees, and broken power poles in every major storm. Downed trees can also obstruct roadways. With the exception of West Shore, East Shore, Bridge, Lord, and parts of North End Road, all roads on Westport are 'dead-end' roads off the Main Road (which also dead ends at the south end of the island). We have a high percentage of elderly residents that can get 'trapped' on obstructed roadways. Some of these residents also rely on power for medical equipment. Because all islanders depend on wells for water, without power and well pumps, they are also without a water supply. During extended power outages, as occur with major storms, the island uses the Westport Volunteer Fire Department (WVFD) as the warming center – where residents can warm, use restrooms, and a shower, cook food, water jugs, and charge their electric equipment. Unfortunately, the WVFD is not handicapped-accessible for the "comfort services" listed; because the gathering room, kitchen and comfort facilities are on the 2nd story, and there is no elevator." **Possible Specific Actions**: *From EMA Director/Deputy Director Survey Response*: "Central Maine Power (CMP) does some roadside vegetative management; but a more comprehensive Town plan for roadside vegetative management may help to decrease downed power lines, road obstructions, and personal and property damage as a result of fallen branches and snapped and uprooted trees during storm events. It could also improve road safety after storms by allowing the sun to help snow and ice melting. A comprehensive survey of all roads to identify vegetation that could impact power lines, e.g., overhanging limbs, shallow roots, and dying or diseased trees would provide an information base for the Town, the State, and CMP to manage the risk of downed power lines and trees. For long-term planning, support is needed for a new fire department building – or a renovated one – which can provide handicapped accessible services. A digital sign at the head of the island would help public safety broadcast of warming and 'comfort services' available at the fire station during prolonged power outages, as well as closed roads due to downed trees and power lines. A digital road map which allows population of road conditions during emergency events and could be posted on the Town website/Facebook page would be a valuable resource for Town administrators and residents during emergency events."
Wiscasset	**Locations**: *From Public Works Director Survey Response*: "Ice jams – Sheepscot Rd. Bridge. Power outages – Willow Lane." **Possible Specific Actions**: *From Public Works Director Survey Response*: "Natural system protection. Tree removal."

Extent (Severity) of the Hazard: Winter storms in Lincoln County are now primarily ice storms that can last for several days and have ice accretion of an inch or more on tree branches and power lines. This can cause major power outages because of downed trees, and/or low land flooding of roads and buildings if accompanied by several days of freezing rain. The "January Thaw", a typical condition where below freezing temperatures can rise into the 50's and 60's overnight and can rapidly melt the snow pack and precipitate flooding of buildings and roads. The worst storm in recent history occurred in January 1998 and caused over $291,000 in damage throughout Lincoln County. This storm, which nearly destroyed the electrical transmission system in the State of Maine, caused major damage to the forests, covered many roadways with debris and ice, and caused some exterior building damages.

Previous Occurrences: The following is a summary of some of the most severe winter storms in Lincoln County.

Severe Winter Storm History in Lincoln County			
MONTH OF EVENT	*YEAR*	*DAMAGES*	*DECLARATION*
December	1929	(*Counties Unknown*) Ice storm extended from western New York into Maine; wide spread power outages from tree and overhead lines damage. Part of historical summary to the DR-1198 FEMA Interagency Report	N/A Source: Cold Regions Research Engineering Laboratories (CRREL)
March 7 Ice Storm	1972	Severe storms, flooding	*Presidential* FEMA-326-DR-ME
January 10	1978	(*Statewide*)	---
March 15	1978	Ice jams and heavy rains	---
March 13-14	1993	(*Statewide*) Maine blizzards, severe winds and snowfall, coastal storm	*Presidential* FEMA-3099-EM-ME
January 5 – 25 *"Great Ice Storm of 98"*	1998	(Statewide) As in 1929, this storm extended from western New York into all of Maine Power outages [Loss of heat, refrigeration, sanitation services]; Forestry damage	*Presidential* FEMA-1198-DR-ME
March 5-31	2001	Maine severe winter storm	*Presidential* FEMA-3164-EM-ME
December 17, 2002 – June 1, 2003	2003	Maine extreme winter weather; severe cold deep and frost; the "frozen pipes" disaster	*Presidential* FEMA-1468-DR-ME
December 11	2008	Maine severe winter storm, winter storms, and extreme cold	*Presidential* FEMA-3298-EM-ME
December 21-26	2013	Severe ice storm caused extended power outages. Accompanied by the "Polar Vortex" it kept subfreezing conditions in place, also resulting in frozen pipes and water damage to homes; at least two deaths from CO poisoning.	*Disaster Declaration denied*
November 1-2	2014	Heavy, wet snow, accompanied by winds caused severe power outages for several days	*None requested*
January 26 – 28	2015	Blizzard that was part of major storm throughout the Northeast. While not included in the Presidential Declaration, Lincoln County experienced significant power outages	*Presidential* FEMA 4208-DR
February 13	2017	(*Statewide*) Blizzard closed state and town offices. Public was warned to avoid any unnecessary travel which made snow removal efforts timely.	*N/A*
March 14	2017	Blizzard conditions along the coast and heavy snow fell throughout the State. School and meeting cancellations. State offices closed at 2PM.	*N/A*

March 13	2018	Several hours of blizzard conditions in western Maine and all along the coast with 1-2 feet of accumulation.	*No declaration*

Sources: FEMA/MEMA

January 1998 Ice Storm: The most severe winter storm was the ice storm of January 1998, which caused over $291,000 in damages throughout the County. This was far less than in counties further inland, but it was still significant. Below freezing temperatures and record rainfall contributed to a blanket of solid ice throughout central Maine. Most State government offices were closed and numerous businesses were forced to close and remained closed due to blocked roadways and power outages.

The following table provides a town-by-town summary of damages resulting from the ice storm of 1998. The table includes only public assistance losses and does not include individual and business losses, which can be substantial.

Ice Storm of January 1998 Town-by-Town Summary of Damages			
Alna	$3,135	Newcastle	$1,370
Boothbay	$24,610	Nobleboro	$5,948
Boothbay Harbor	$10,473	Somerville	$29,579
Bremen	$1,942	South Bristol	0
Bristol	$5,593	Southport	0
Damariscotta	$8,969	Waldoboro	$48,113
Dresden	$30,449	Westport Island	$4,933
Edgecomb	$26,858	Whitefield	$61,607
Jefferson	$14,286	Wiscasset	$13,990
Monhegan Island Plt	0	**Lincoln County**	**$291,855**

Probability of Occurrence: It is expected that a severe winter storm will create damage in Lincoln County at least once every three years, based upon the data presented above.

WILDFIRE

Lincoln County is subject to wildfires. Nearly 80% of the County is forest land and the accessibility by vehicle to many areas is limited. 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.

All parts of Lincoln 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.

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

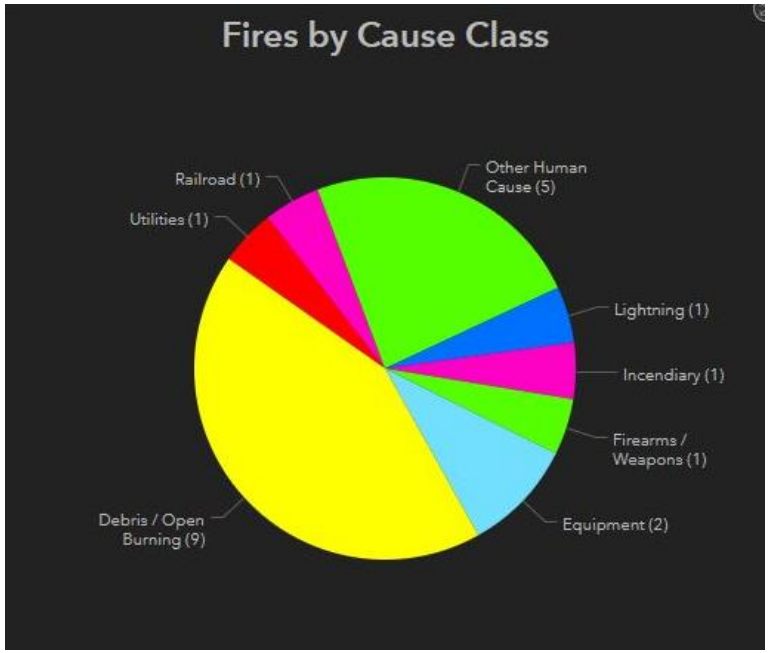
Wildland fires are defined as those fires that burn vegetative cover: grass, brush, timber, or slash;

Wildland urban interface fires are created when homes meet with high volatile forest fuels.

Location of Hazard: The Department of Conservation, Maine Forest Service Forest Protection Division[17] tracks all reported fire occurrences in the State on an annual basis. Based on a review of this information, there have been no major fires in Lincoln County in recent years.

As of May 2021, Lincoln County has had twenty-one (21) wildfires this year, with ten (10) of those fires being between April and May of 2021, burning a total of 18.4 acres. The breakdown of wildfire causes is shown in the graph below, obtained from the Maine Forest Service.

[17] Maine Forest Service (2021). *Wildland Fire Occurrence Dashboard*. https://nifc.maps.arcgis.com/apps/dashboards/9717d0e20c5543d8a8b5e3ca0430d676. Accessed on May 18, 2021.



Source: Dept. of ACF, Maine Forest Service, Lincoln County - Calendar Year 2021 (May 18, 2021)

Municipal Survey – Location of Areas Susceptible to Wildfires: Survey respondents were asked to identify areas in their municipality that are susceptible to wildfires and subsequent property damage, such as home and vacation properties in the woods. Respondents were also asked to list out possible specific actions for the County (as a whole) and their towns to undertake in the susceptible areas to wildfire damage.

The following is a summary of areas that are susceptible to wildfires, as identified in the Lincoln County Hazard Mitigation Planning Survey 2021.

County Wide	**Potential County-Wide Actions:** "Camp road trimming to access with fire apparatus. Education home owners on cleared zone." "Technical assistance with prioritizing of fuel reduction and other fire prevention activities. Technical assistance with identifying dry hydrant locations and systems." "As above regarding water supply to assist combating wild fires." "Towns cooperate and help each other through mutual aid." "Natural systems protection" "Local plans or regulations" "Education and awareness programs"

Alna	**Locations**: *From Alna EMA Director Survey Response*: "All" **Possible Specific Actions**: *From Anonymous Alna Resident No. 1*: "Education and awareness programs. Wildfire is an increasing threat. We need improved creation of defensible spaces around homes in Alna. We need to plan effective ways of communicating to affected people where wildfires are, and what the appropriate evacuations routes are. Rural homes: need wildfire evacuation communications and evacuation routes, as well as defensible spaces around homes."
Boothbay	**Locations**: *None listed by Anonymous Boothbay Resident No. 1* **Possible Specific Actions**: *From Anonymous Boothbay Resident No. 1 Survey Response*: "Local plans or regulations"
Bremen	**Locations**: *From Town Selectman Survey Response*: "Entire town." **Possible Specific Actions**: *None listed by Town Selectman*
Bristol	**Locations**: *From Town Administrator Survey Response*: "Bristol has homes and vacation homes throughout our town which is 85% forest covered." **Possible Specific Actions**: *From Town Administrator Survey Response*: "To late for planning limits on 'sprawl'! That horse bolted the stable around 1950 Education and awareness? Buried infrastructure (to avert fires from downed power lines)?"
Damariscotta	**Locations**: *From EMA Director Survey Response*: "Camp roads." **Possible Specific Actions**: *From EMA Director Survey Response*: "Trim back trees along roadways."
Edgecomb	**Locations**: *From Anonymous Edgecomb Resident No. 1 (identified as fire officer and deputy EMA Director) Survey Response:* "Schmid Preserve" **Possible Specific Actions**: *From Anonymous Edgecomb Resident No. 1 (identified as fire officer and Deputy EMA Director) Survey Response*: "Education and awareness programs"
Monhegan Island Plantation	**Locations**: *From EMA Director Survey Response*: "Nearly all portions of Monhegan Island, including 350 acre private land trust that borders Monhegan Village." **Possible Specific Actions**: *From EMA Director Survey Response*: "Annual homeowner/property owner education program to teach bests practices for reducing forest fire risk and enhancing protection of property. Collaboration with Monhegan Associates land trust to identify high risk areas, mitigation activities and, when appropriate, increase affordable access to cutting forestry management services to landowners." *From Anonymous Monhegan Resident No. 1 Survey Response*: "Natural systems protection"
Somerville	**Locations**: *From EMA Director Survey Response*: "We currently have numerous sites throughout town susceptible to wildfire damage." **Possible Specific Actions**: *From EMA Director Survey Response*: "As above referenced under wildfires to include 'enforcing' trash, rubbish, brush, and other flammable materials removable from around structures."

South Bristol	**Locations**: *From EMA Director Survey Response*: "Wildfires could happen in any part of town." **Possible Specific Actions**: *From EMA Director Survey Response*: "Keep wildfire fighting equipment maintained and ready for action at any time. Maintain up to date training of fire department personnel."
Southport	**Locations**: *None listed by Anonymous Southport Resident No. 1* **Possible Specific Actions**: *From Anonymous Southport Resident No. 1 Survey Response:* "Natural systems protection"
Waldoboro	**Locations**: *From EMA Director Survey Response*: "Waldoboro is primarily a rural community with the exception of a small downtown area and the Route 1 corridor. These areas are fairly free from the threat of wildfire. However, lands to the north and south of Route 1 are heavily forested with fields and farms scattered throughout. During long periods of drought most of the town would be susceptible to property damage (homes, agriculture, and forestry) from wildfire." **Possible Specific Actions**: *From EMA Director Survey Response*: "Specific actions are contained in the Waldoboro Emergency Operation Plan." *From Anonymous Waldoboro Resident No. 1 Survey Response*: "Structure/infrastructure projects" *From Anonymous Waldoboro Resident No. 2 Survey Response*: "Local plans or regulations" *From Anonymous Waldoboro Resident No. 3 Survey Response*: "Local plans or regulations" *From Anonymous Waldoboro Resident No. 4 Survey Response*: "Education and awareness programs" *From Anonymous Waldoboro Resident No. 5 Survey Response*: "Local plans or regulations" *From Anonymous Waldoboro Resident No. 6 Survey Response*: "Local plans or regulations"

Westport Island	**Locations**: *From EMA Director/Deputy Director Survey Response*: "There are vacation properties throughout the Westport Island community, many of which are shoreline wooded lots; most of Westport has dense tree vegetation. The greatest risks for wildfires are remote treed areas with a build-up of forest floor duff – a dense layer of decomposed leaves, pine needles, and decomposed vegetative matter. The southernmost end of the island is most at risk from fires because of increased isolation and distance from water sources for firefighting. The Island has at least three duff fires on the south end in the last five +/- years. Many are unfamiliar with the particular hazards associated with duff when conducting approved burns or when siting or enjoying recreational fires." **Possible Specific Actions**: *From EMA Director/Deputy Director Survey Response*: "Prevention of wildfires is an area that could benefit from education and awareness regarding the unique characteristics of island duff and delayed 'smoldering combustion'. In recent duff fires, those conducting burns believed their fires to be extinguished, unaware that smoldering under the forest surface in a dense duff layer continued. Combustion later occurred when the sites were unattended. Each of these fires were on the south end of the island where firefighters do not have ready access to fresh water sources. Water sources are the WVFD's biggest obstacle in firefighting efforts. There are no hydrants on Westport; the nearest hydrant is at the Wiscasset Water Works about 2.5 miles off the island from the Westport-Wiscasset Bridge at the north end of the island. There is only one dry hydrant in service – also on the north end of the island. The WVFD needs town and resident support in its efforts to develop dry hydrants and reliable sources of fresh water and to explore the placement of fire cisterns in some areas for public protection – with a special focus on the center/south end of the island. A feasibility study with implementation guidelines would help identify the most cost-effective, practical options available to Westport for a reliable fire-fighting water supply: dry hydrants, fire cisterns, equipment to allow the use of salt water without sacrificing the useful life of expensive firefighting equipment, etc. A digital sign at the head of the island would help us broadcast extreme wildfire conditions and fire permit contacts, as well as locations to avoid because of fire department activity."

Extent (Severity) of the Hazard: Lincoln County could be subject to wildfires if it were to experience several years of drought. The likelihood of a wildfire is low, but the impact would be high because of potential damages to homes located in wooded areas. However, there have been no major wildfires (over 1,000 acres) in Lincoln County. The most sever wildfire in the State's recent history occurred in October 1947, devastating 205,687 acres and causing 16 deaths. In 1947, most of the damages were confirmed 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 Lincoln County in recent years. All of the wildfires known to have occurred were confined to relatively small land areas. As of May 2021, a total of 18.4 acres have burned for calendar year 2021 from 21 separate wildfire incidents in Lincoln County (per the Maine Forest Service GIS database).

Probability of Occurrence: While probability studies have not been done, based on the historical record of fires, the Department of Conservation, Maine Forest Service Protection Division anticipates that, on a state-wide basis, there will be between 600-700 low acreage fires (from all causes) each year (a low acreage fire is less than 500 acres). As of May 2021, the State has experienced 361 wildfires for

calendar year 2021, burning a total of 254.7 acres. Based on a report from the U.S. Forest Service[18], 330 wildfires have occurred in Lincoln County between 1992-2018, accounting for a total of 281 burned acres. Based on this report, the average number of wildfires per year in Lincoln County is approximately 12, with an average of 10.41 acres burned per year. The largest wildfire during this time period burned 16.3 acres in 2005.

[18] Spatial wildfire occurrence data for the United States, 1992-2018 https://www.fs.usda.gov/rds/archive/Catalog/RDS-2013-0009.5

DROUGHT

Drought is a normal recurring feature in all climatic regions. While all droughts originate with a deficiency of precipitation, drought is a unique hazard due to the usually slow progression of the phenomenon. Drought impacts respond to precipitation anomalies on varied timescales. This makes it difficult to determine a clear beginning or end to any drought event, particularly those that are prolonged. The duration of drought can vary from several weeks to several years. The U.S. Drought Monitor[19], which started in 2000, indicates the longest duration of drought (D1-D4) in Maine lasted 110 weeks, beginning on June 19, 2001 and ending on July 22, 2003. The most intense period of drought occurred the week of January 8, 2002, where D3 affected 61.67% of Maine land.

General Definition: Drought is a period of below-average precipitation in a given region, resulting in prolonged shortages in its water supply. This can include atmospheric, surface water, or groundwater.

Types of Drought in Lincoln County:

Meteorological Drought: When dry weather patterns dominate an area.

Hydrologic Drought: When low water supply becomes evident in streams, reservoirs, and groundwater levels. Hydrologic drought indicators lag significantly behind meteorological drought indicators.

Agricultural Drought: When precipitation deficits, soil water deficits, reduced ground water, or reduced reservoir levels impact agricultural yields.

Socioeconomic Drought: When physical drought conditions impact the supply and demand of economic goods and services.

Location of Hazard: Because drought classification is relative to average local precipitation, surface, and groundwater levels, all of Lincoln County is susceptible to drought.

Municipal Survey – Location of Areas Susceptible to Drought: Respondents were asked to identify areas in their municipality that are susceptible to drought, such as areas with prolonged shortages of water supply, and/or having effects on homeowners, crop or pastures losses, hydroelectric generators, and those with interests in the forest community. Survey respondents were also asked to list out possible specific actions for the County (as a whole) and their municipality to undertake in areas susceptible to drought.

The following is a summary of areas that are susceptible to drought, as identified in the Lincoln County Hazard Mitigation Planning Survey 2021.

[19] https://droughtmonitor.unl.edu/

County Wide	**Potential County-Wide Actions**: "Not an issue so far." "Technical assistance with public water supply water treatment systems for unique remote setting." "Technical assistance to maximize safety of Monhegan Island's private water supply in order to minimize contamination of the public water supply and maximize the private water supply in the face of a public water supply shortage." "In cooperation with natural resources and wildlife management create artificial ponding areas for remote water supply." "Designate places to supply water to residents in event of dry wells." "Education and awareness programs" "Natural systems protection" "Local plans or regulations" "Structure/infrastructure projects"
Alna	**Locations**: *From Alna EMA Director Survey Response*: "All" **Possible Specific Actions**: *From Anonymous Alna Resident No. 1 Survey Response*: "Education and awareness programs"
Boothbay	**Locations**: *None listed by Anonymous Boothbay Resident No. 1* **Possible Specific Actions**: *From Anonymous Boothbay Resident No. 1 Survey Response*: "Natural systems protection"
Bristol	**Locations**: *From Town Administrator Survey Response*: "Shallow wells are vulnerable in times of drought especially in denser-populated villages (which often have older, shallow wells). Farm crop losses likely if irrigation is banned." **Possible Specific Actions**: *From Town Administrator Survey Response*: "Long term may need to have year-round municipal water in New Harbor/Pemaquid area."
Edgecomb	**Locations**: *None listed by Anonymous Edgecomb Resident No. 1* **Possible Specific Actions**: *From Anonymous Edgecomb Resident No. 1 (identified as fire officer and deputy EMA Director) Survey Response:* "Education and awareness programs"
Monhegan Island Plantation	**Locations**: *From EMA Director Survey Response*: "Bog Meadow Aquifer – Monhegan Water Company (public water supply). Ice Pond (water source for fires). Various dug wells (water source for fires). Island Farm (crop loss). Monhegan Plantation Power District Power Station, Monhegan Museum, and residences and other utilities atop Lighthouse Hill where gravity feed public water supply is less effective for fire suppression needs." **Possible Specific Actions**: *From EMA Director Survey Response*: "Identify alternative water sources and plan for access. Install/upgrade pumps, well points, and water quality equipment to maximize efficiency of water system. Evaluate water company operations and management fee increases to ensure long-term financial stability. Education and awareness programming, esp. among visitors re: water conservation. Identify plausible dry hydrant locations that will remain functional in drought conditions, including saltwater sources (& shift Fire Dept. capabilities to make use of any new water sources). Determine if use of grey water can be employed in any significant ways. Retrofit Water Storage Tanks atop Lighthouse Hill to improve fire suppression options to nearby structures."

Somerville	**Locations**: *From EMA Director Survey Response*: "There are numerous farms of various types including agricultural, livestock, and marijuana in town most are susceptible to long term drought." **Possible Specific Actions**: *None listed by EMA Director*
South Bristol	**Locations**: *From EMA Director Survey Response*: "There are no farms in town but lack of clean water can become a problem in areas close to the coast." **Possible Specific Actions**: *From EMA Director Survey Response*: "Allow residents to get clean water at town fire stations year round."
Southport	**Locations**: *None listed by Anonymous Southport Resident No. 1* **Possible Specific Actions**: *From Anonymous Southport Resident No. 1 Survey Response:* "Natural systems protection"
Waldoboro	**Locations**: *From EMA Director Survey Response*: "Waldoboro is primarily a rural community with the exception of a small downtown area and the Route 1 corridor. These areas are fairly free from the threat of drought as they are fed by the town water system. However, lands to the north and south of Route 1 rely on wells or springs. During long periods of drought, many areas of the town could be susceptible to water shortages due to dry wells." **Possible Specific Actions**: *From EMA Director Survey Response*: "Specific actions are contained in the Waldoboro Emergency Operation Plan." *From Anonymous Waldoboro Resident No. 1 Survey Response*: "Education and awareness programs" *From Anonymous Waldoboro Resident No. 2 Survey Response*: "Education and awareness programs" *From Anonymous Waldoboro Resident No. 3 Survey Response:* "Local plans or regulations" *From Anonymous Waldoboro Resident No. 4*: "Natural systems protection" *From Anonymous Waldoboro Resident No. 5*: "Education and awareness programs" *From Anonymous Waldoboro Resident No. 6*: "Local plans or regulations"

Westport Island	**Locations**: *From EMA Director Survey Response*: "There is no public water system on Westport. All homeowners have wells; and according to the Maine Geological Survey, Westport's fresh water is derived entirely from the island's rainfall. Several Westport homes on the shoreline are the first to experience the effects of summertime drought – and in some cases, saltwater intrusion – and require replenishing of their wells by private water companies whether the island is in the mild or full drought conditions. Summertime drought conditions come at the same time there is heavier demand on water systems from summer residents and visitors. Westport has limited fresh water sources for firefighting; lack of access to fresh water sources for firefighting is exacerbated during drought conditions." **Possible Specific Actions**: *From EMA Director Survey Response*: "The Planning Board is reviewing land use ordinances, including minimum lot sizes, as well as reviewing water quality protection practices and standards as to how they relate to construction and maintenance of public and private roads and public properties. A digital sign at the head of the island would help us to broadcast drought conditions."

Extent (Severity) of the Hazard: The extent of a drought can vary from localized events in a specific watershed to a statewide occurrence; from short term (a single season) to long-term duration (several years – as was the case from 2001 to 2003); or from an abnormally dry spell to a drought of exceptional intensity.

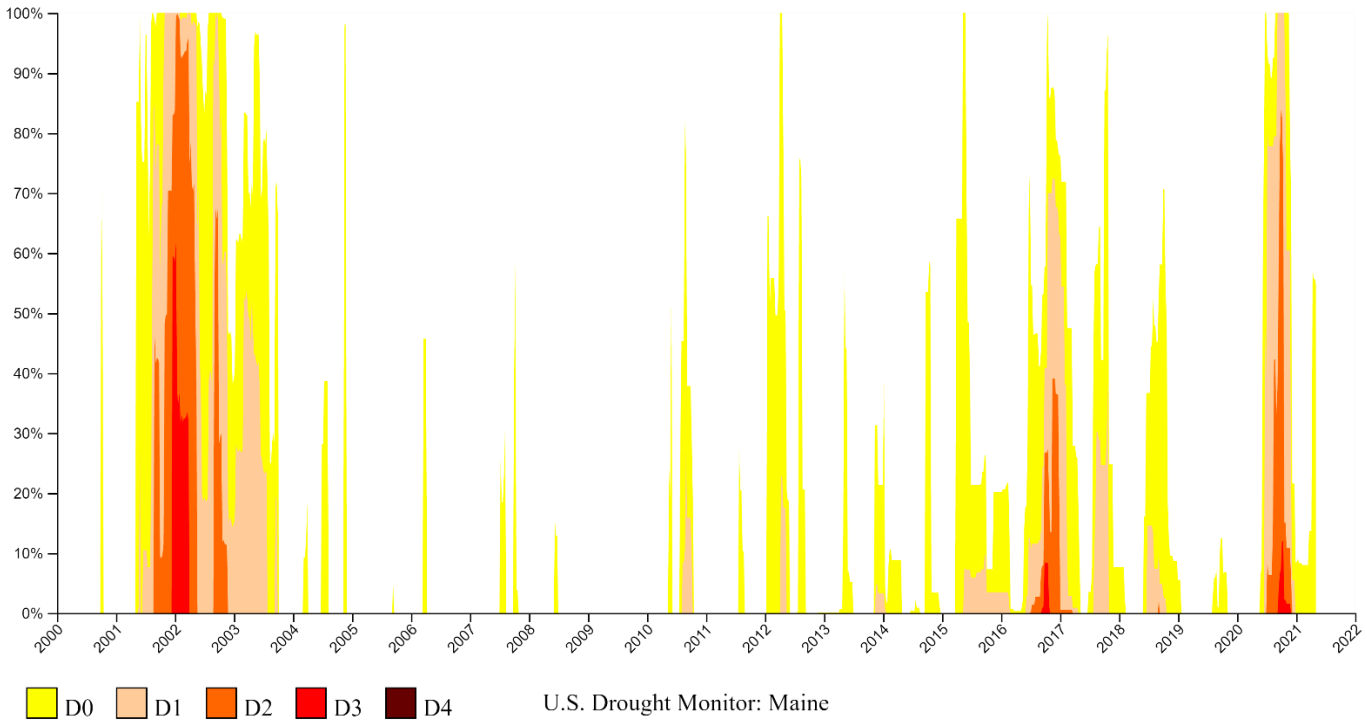
The State of Maine uses the U.S. Drought Monitor's classification method to measure the extent of drought events as they occur.

U.S. Drought Monitor Drought Classification						
Category & Description	**Possible Impacts**	**PDSI**	**CPC Soil Moisture Model**	**USGS Weekly Streamflow**	**SPI**	**Objective Drought Indicator Blends**
D0 Abnormally Dry	-Short term dryness slowing planting, growth of crops or pastures	01 to -1.9	21 to 30	21 to 30	-0.5 to -0.7	21 to 30
D1 Moderate Drought	-Some damage to crops, pastures -Streams, reservoirs, or wells low, some water shortages	-2 to -2.9	11 to 20	11 to 20	-0.8 to -1.2	11 to 20

	developing or imminent					
D2 Severe Drought	-Crop/ pasture losses likely -Water shortages common	-3 to -3.9	6 to 10	6 to 10	-1.3 to -1.5	6 to 10
D3 Extreme Drought	-Major crop/ pasture losses -Widespread water shortages	-4 to -4.9	3 to 5	3 to 5	-1.6 to -1.9	3 to 5
D4 Exceptional Drought	-Exceptional and widespread crop/pasture losses -Shortages of water creating emergencies	-5 or less	0 to 2	0 to 2	-2 or less	0 to 2

Source: U.S. Drought Monitor; MEMA

Previous Occurrences: Below is a chart from the U.S. Drought Monitor showing Maine's drought conditions on a weekly basis dating from 2000 to present.



Excerpted from the Maine State Hazard Mitigation Plan (2019 Update):

> *"Maine's 1999-2002 drought period was the most damaging to date. There was an estimated 17,000 private wells that ran dry in the nine months prior to April 2002, and farmers lost more than 32 million dollars in crop yield between 2001 and 2002.*
>
> *Maine's Drought Task Force convened in August 2016 for the first time in 14 years and continued to meet monthly through December. The 2016 drought was a result of three years of below average precipitation which led to low groundwater levels statewide, but particularly in the southern portion of Maine. As of this writing, the final impacts of the drought are undetermined, but it is reasonable to assume that the significant investments water utilities have made after the 2001 drought mitigated the impacts of the 2016 drought. Hundreds of millions of dollars have been spent replacing antiquated water mains. That has resulted in reduced loss of water through leakage. Additionally, many of those projects upgraded interconnections which have improved the ability of water utilities to purchase water from neighboring systems when the need has arisen."*

As of the final drafting of this report, July 2021, the U.S. Drought Monitor has Lincoln County designated as "D0 – Abnormally Dry". The Maine Emergency Management Agency (MEMA) and U.S. Geological Survey (USGS) commenced a preliminary activation of the Drought Task Force[20] for the 2021 season on April 22nd of this year. Per MEMA:

> *"The U.S. Drought Monitor mapping program shows extensive abnormally dry conditions across the state of Maine that exceed the threshold required for activating the Task Force. Given that these conditions are occurring early in the year, and in combination with the many vaccination-related efforts taking precedence at MEMA, Task Force Chairs from USGS and MEMA approved a preliminary activation of the Task Force.*
>
> *Currently about 55% of Maine is experiencing abnormally dry conditions, impacting 15 counties. The majority of streamflows and groundwater levels are lower than average springtime conditions, though recent rainfall has temporarily increased some streamflows in western and southern Maine. River basin reservoir managers are storing more water than average in anticipation of abnormally dry conditions. More precipitation is expected at the start of next week. Task Force members will stay in close communication until the dry conditions subside."*

Probability of Occurrence: While probability studies have not been performed for Lincoln County, as shown in the above chart from the U.S. Drought Monitor, the State of Maine has experienced drought conditions more frequently over the past few years.

Issues and Challenges: Per MEMA's 2019 State Hazard Mitigation Plan Update, the following items are considered challenges:

> *"Ineligibility for Hazard Mitigation Assistance: Since droughts do not receive presidential declarations, common drought mitigation activities, which include measures to increase efficiency and/or drilling wells deeper into the water table, are not eligible for funding through FEMA's Individual Assistance Program.*
>
> *Residents on Private Wells: With nearly half of the state's population relying on private wells for water supply, the state has limited capacity for managing individual water supply."*

[20] https://www.maine.gov/mema/hazards/drought-task-force

PANDEMIC

Given the ongoing COVID-19 Pandemic, the Planning Team determined it was appropriate to feature 'pandemic' as part of the County's Hazard Mitigation Plan Update risk assessment. **A full description and operations protocols are contained in the Lincoln County Emergency Operations Plan – Diseases and Epidemics**[21] which can be found in Appendix D of this document.

General Definition: Disease is a condition of an organism that impairs physiological functioning, resulting from causes such as infection, genetic defect or environmental stress. An epidemic is a widespread outbreak of an infectious disease where many people are infected at the same time. A pandemic describes an epidemic of global proportions.

The State of Maine Pandemic Influenza Plan identifies the following Pandemic Influenza Categories:

State of Maine and WHO Pandemic Categories	
Pre-pandemic (WHO* Phase 1,2)	No new influenza virus subtypes have been detected in humans. An influenza virus subtype that has caused human infection may be present in animals, or a circulating animal influenza poses a substantial risk of human disease.
Level I (WHO Phase 3)	Human infection(s) with a new subtype, but no human-to-human spread, or at most rare instances of spread to a close contact.
Level II (WHO Phase 4)	Small cluster(s) with limited human-to-human transmission but spread is highly localized, suggesting that the virus is not well adapted to humans.
Level III (WHO Phase 5)	Larger cluster(s) but human-to-human spread still localize, suggesting that the virus is becoming increasingly better adapted to humans, but may not yet be fully transmissible.
Level IV (WHO Phase 6)	Pandemic Phase: Increased and sustained transmission in the general population.
Level V Post Pandemic	Indices of influenza activity have returned to pre-pandemic levels.

Source: Disease and Epidemics, Lincoln County Emergency Operations Plan

Location of Hazard: Per the U.S. Center for Disease Control (CDC)[22]:

> *"Coronavirus disease is a respiratory illness that can spread from person to person. The virus is thought to spread mainly between people who are in close contact with one another (within about 6 feet) through respiratory droplets produced when an infected person coughs or sneezes. It is also possible that person can get COVID-19 by touching a surface or object that has the virus on it and then touching their own mouth, nose, or eyes…People with COVID-19 have had a wide range of symptoms reported – ranging from mild symptoms to severe illness. Symptoms may appear 2-14 days after exposure to the virus."*

[21] Lincoln County Emergency Operations Plan, Appendix 8, Diseases & Epidemics
[22] https://www.cdc.gov/coronavirus/2019-ncov/index.html

The COVID-19 pandemic has been a global disease with countries worldwide instituting non-essential businesses and institutions, including schools, to work remotely; establishing quarantine requirements for those infected or exposed to an infected person; mask-wearing protocols; and social distancing requirements.

Municipal Survey: Inasmuch as Lincoln County has a Disease and Epidemic Plan contained in the Lincoln County Emergency Operations Plan and, further, because pandemics are not limited to a geographical area in town, the Municipal Survey did not specifically ask about areas in communities susceptible to pandemics.

Extent (Severity) of the Hazard: As of the drafting of this Hazard Mitigation Plan Update, the following are the total case and death numbers of the COVID-19 Pandemic:

COVID-19 Pandemic Statistics *(as of August 30, 2021)*		
	Total Cases	Total Deaths
Lincoln County	1,226	3
State of Maine	753,000	930
United States	38,900,000	637,000
Worldwide	217,000,000	4,510,000

Source: The Wiscasset Newspaper; The New York Times

Two federal declarations were issued for the State of Maine for the COVID-19 Pandemic:

Declaration Number	Incident Period	Declaration Date
Maine COVID-19 EM-3444-ME	January 20, 2020 and ongoing	March 13, 2020
Maine COVID-19 PANDEMIC DR-4522-ME	January 20, 2020 and ongoing	April 4, 2020

Previous Occurrences: Other infectious diseases have impacted Maine in the past. Several cholera outbreaks occurred between the 1830s and 1850s in Maine. The 1918 influenza pandemic was the worst pandemic (based on loss of life) in modern Maine history. Approximately 50 million people died worldwide, with Maine accounting for over 5,000 of those deaths between September of 1918 and May 1919. Maine's total case count was 47,000. More recently, then Governor John Baldacci declared the 'swine flu' (2009) a civil state of emergency. Maine had 2,232 confirmed cases and 21 deaths.

Statistics for these previous occurrences are not available specific to Lincoln County.

Probability of Occurrence: The last pandemic of a similar magnitude to COVID-19 was approximately 100 years ago. A probability study on pandemics/epidemics for Lincoln County has not been prepared, at least not one known to the Planning Team. The Lincoln County Emergency Management Agency (EMA) has a Disease & Epidemics plan contained within the Lincoln County Emergency Operations Plan. This plan has been utilized throughout the course of the COVID-19 pandemic and will be utilized in any future disease outbreaks, epidemics, and/or pandemics.

Vulnerability Assessment:

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 the jurisdiction that have been repetitively damaged by floods?

Vulnerability of Lincoln 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 including downtown district areas of Boothbay Harbor and the C1 Commercial District of Boothbay. With the exception of the aforementioned areas, most of the developed areas in Lincoln County are located outside of designated flood plains, and are thus not as vulnerable to flooding. However, 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 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 FEMA flood plain. See also discussion of dam breach flooding in Element B2.

As noted in the summary of Municipal Survey responses on the location of flood-prone areas in Element B1, Boothbay Harbor's Wastewater Treatment Plant and certain pump stations are at risk of potential impact and isolation within FEMA's 100-year coastal flood zone. In Bremen, properties on Medomak River, Biscay Pond, Pemaquid Pond, McCurda Pond, Route 32, and Muscongus Road are all susceptible to flooding. Somerville, while an inland community, has a number of gravel roads susceptible in varying degrees to overtopping and/or hillside ditch erosion, including some areas contributing to the siltation in Damariscotta and the Sheepscot Watershed.

Severe Summer Storms: The entire County is vulnerable to thunderstorms, microbursts and high winds, especially from the very high winds, which often accompany severe coastal summer storms. Heavy rains that often accompany such storms can erode vulnerable shoreland areas.

In Alna, Rabbit Path, Route 194, Route 218, and Cross Road (at the hydrant) are susceptible to summer storm impacts. Power outages in Bristol are particularly common along Pemaquid Harbor Road, the south side of Round Pond, Old County Road, Chamberlin and Long Cove Point, Pemaquid Point, Benner/Fogler Roads, Carl Bailey Road, Southside Road in New Harbor, and Pemaquid Trail. South Bristol is vulnerable to trees blocking roads and taking down power lines during a severe summer storm. Most roads, if not all, in Waldoboro could be impacted to debris from heavy winds and lighting strikes. "A direct strike from a tropical storm (especially when leaves are still on the trees) would bring widespread damage to the area. A category 1-2 Hurricane would devastate the area and potentially render some areas inaccessible for weeks" per the municipal survey response from the Waldoboro EMA Director.

Severe Winter Storms: Lincoln County's location in Northern New England places it in a high-risk area for winter storms. While the majority of winter storms in Lincoln 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 Lincoln County and threaten the overhead electric and telephone lines. Roads may be closed due to wash outs and debris in roads from trees and utility lines.

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

Monhegan, South Bristol, Bremen, Bristol, Waldoboro, and Westport Island all stated that their towns are susceptible to power outages and other impacts from severe winter storms given their dense tree cover and tree-lined roads.

Wildfires: Lincoln County is heavily forested, and is vulnerable to wildfires. However, all of the organized municipalities in Lincoln County as served by capable fire departments. The Maine Forest Service has been very active in forest fire prevention activities and, through meetings convened by the Lincoln County Emergency Management Agency, meets periodically with municipal fire chiefs on matters related to wildfire prevention and response activities. Of concern is the lack of mapping on a County-scale of fire lanes and assessment of vehicle capacity for such lanes (especially in instances of mutual aid being required). It may be difficult to get emergency vehicles back out of rural/heavily forested areas following a forest fire.

Camp roads in Damariscotta, Schmid Preserve in Edgecomb, the 350-acre private land trust bordering Monhegan Village, and the south end of Westport Island were identified as areas being susceptible to wildfires through the hazard mitigation municipal survey.

Drought: Lincoln County is vulnerable to drought and has experienced drought conditions more frequently over the past decade. Drought conditions can affect the agricultural industry as well as residential property owners serviced by private wells.

Shallow wells in Bristol are vulnerable in times of drought, especially in denser-populated villages, which often have older, shallow wells. The Monhegan EMA Director in her hazard mitigation survey response identified both bog Meadow Aquifer (public water supply) and Ice Pond (water source for fires) as areas especially susceptible to drought. Sommerville noted they have numerous farms of various types, including agricultural, livestock, and marijuana, that may be impacted by long-term drought conditions.

Pandemic: While rare throughout Lincoln County's history, pandemics do occur. The most recent occurrence is the ongoing COVID-19 Pandemic. For full details, please refer to the Disease & Epidemics plan contained within the Lincoln County Emergency Operations Plan.

At-Risk Population: The following is a summary of vulnerable populations, as identified in the Lincoln County Hazard Mitigation Planning Survey 2021. Respondents were asked to identify vulnerable populations in their municipality in regards to disaster response, for example, dead-end roads where residents could be isolated, or where disabled or older residents live.

County Wide	*No response*
Alna	*From Alna Anonymous Resident No. 1 Survey Response*: "Low income: heating during power outages. Rural homes: need wildfire evacuation communications and evacuation routes, as well as defensible spaces around homes."
Boothbay	*From Boothbay Anonymous Resident No. 1 Survey Response*: "Those without internet or generators"
Boothbay Harbor	*From BBH Sewer District Superintendent Survey Response*: "St. Andrews Village on Emery Lane is a geriatric assisted living center and is located on a dead end road. Although the Village has its own emergency power supply, the District's pump station serving this area does not have installed emergency power. Extended power outage at this location could result in sanitary sewer overflows to the nearby Meadowbrook Marsh."
Bremen	*From EMA Director Survey Response*: "70% of the Town"
Bristol	*From Town Administrator Survey Response*: • "*Congregate Elderly Housing: Round Pond Green, 1410 State Rte. 32, Round Pond.* • *Pemaquid Villas (Trailer Park) – Route 130 South of Bristol Consolidated School (Dead end road with numerous elderly and some disabled persons)* • *Pemaquid Point (Numerous elderly people; single access route)*"
Damariscotta	*From EMA Director Survey Response*: "Great Salt Bay Apartments; Phillips Trailer Park; Egypt Road Trailer Park"
Monhegan Island Plantation	*From EMA Director Survey Response*: "Lower/lowest income residents – may have fewer resources for shelter, food, healthcare including access to mental health resources, mainland transportation and lodging options."
Somerville	*From EMA Director Survey Response*: "We have numerous dead end locations several of which include an aging population."
South Bristol	From EMA Director Survey Response: "*Many dead end roads with older residents. Will continue to coordinate power outages with County EMA and CMP*."

Waldoboro	*From EMA Director Survey Response*: "There are numerous dead end roads in Waldoboro that can be isolated due to storm damage (trees down, heavy snow, etc.). Some are highly populated with many residents. These areas include: Gross Neck Road, Dutch Neck Road, Back Cove Road, Deaver Road, Reef Road, Miller Road, Jackson Road, Winston Road, Controversy Lane, Noyes Road, and Storer Mountain Road. There are many others with only a few residents. Waldoboro Green is small Assisted Living facility with elderly reside. Additionally, the Sproul Block is a four-story apartment building with numerous elderly and disabled residents."
Westport Island	*From EMA Director/Deputy EMA Director Survey Response*: "As noted in storm consequences, with the exception of West Shore, East Shore, Bridge, Lord and parts of North End Road, all roads on Westport are 'dead-end' roads off the Main Road – which also dead ends at the end of the island. We have a high percentage of elderly residents that can get 'trapped' on obstructed roadways. Some of these residents live alone; and some rely on power for medical equipment. All residents rely on power for well pumps for their water supplies."

Impacts of each Hazard on Lincoln County:

Flooding. In addition to damages to residential and commercial structures in some locations, the typical damages resulting from flooding in Lincoln 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. See also discussion of dam breach flooding in Element B2.

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.

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/ice treatment efforts, and loss of income to businesses and individuals due to business closures.

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.

Drought. Drought conditions cause loss of agricultural crops and can cause drinking water shortages for residents serviced by a private well, which is a large portion of Lincoln County residents.

Pandemic. The primary impacts of pandemics include loss of life and severe illness. The entirety of the County is vulnerable to pandemics.

Repetitive Loss Properties: Based on information obtained from the Federal Emergency Management Agency (FEMA), there are a number of repetitive loss properties in Lincoln 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.

FEMA Definition of Repetitive Loss Property: A repetitive loss property is a structure covered by a contract for flood insurance made available under the NFIP that:

(a) Has incurred flood-related damage on two occasions, in which the cost of the repair, on the average, equaled or exceeded 25% of the market value of the structure at the time of each such flood event; and
(b) At the time of the second incidence of flood-related damage, the contract for flood insurance contains increased cost of compliance coverage.

Lincoln County Repetitive Loss Properties *Source: State NFIP Coordinator, 5/10/2021*[23]				
	Residential Structures		**Non-Residential Structures**	
Town/City	**No. of Properties**	**No. of Losses**	**No. of Properties**	**No. of Losses**
Boothbay	1	2	1	2
South Bristol	-	-	1	2
Southport	1	2	-	-
TOTAL	**2**	**4**	**2**	**4**

Participating jurisdictions with no repetitive loss structures are not listed in this table.

The State National Flood Insurance Program (NFIP) Coordinator confirmed there are 354 flood insurance policies in Lincoln County. Total coverage for these policies is $98,909,000, with a total premium of $465,088. One-hundred claims have been made since 1978, totaling $1,062,273.

Assessing Vulnerability: Identifying Structures: The Hazard Mitigation Plan identified existing buildings, infrastructure, and critical facilities located 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.

The critical facilities identified in Lincoln County are municipal offices, fire and police stations, post offices, town garages and sand/salt sheds, hospitals and clinics; electric and communication utilities; water and wastewater treatment facilities; hazardous materials sites; and schools that have been identified as shelters.

In 2015, the Lincoln County Emergency Management Agency used existing Maine GIS map data and a handheld GPS data collector to map and locate the County's critical facilities and determine which are most likely to be affected by hazards. The hazards most likely to impact the County are flooding, severe summer storms, severe winter storm events, wildfires, drought, and pandemic - as summarized below and on the following pages.

Vulnerability of Existing Buildings, Infrastructure, and Critical Facilities

Flooding: One hospital and five bridges were identified as being located in the 100-year flood areas. The most likely flooding will come from coastal flooding occurring during a severe coastal storm or a Category 1 Hurricane.

- Buildings: Some of the County's most serious flooding has been in areas where there are residential and/or commercial structures including the downtown areas of Boothbay Harbor and the C-1 District of Boothbay.

[23] Maine State NFIP Coordinator response, 05/11/2021

- 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 vulnerable to flooding caused by heavy downpours and/or the blockage of drainage systems by ice or debris. A major coastal storm could impact the downtown roadways in Boothbay and Boothbay Harbor, plus five major bridges.
- Critical Facilities: A major coastal storm could impact the hospital.

Severe Summer Storms:

- Buildings: All buildings in Lincoln County are 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: Roads and their associated storm drainage systems (or lack thereof) are the most vulnerable category of infrastructure. They can become temporarily blocked due to heavy rain and debris over a short period. A Category 1 hurricane could have an impact on all roads in the County and on all overhead electrical power and telephone lines. Roads may be blocked with tree and utility line debris. Utility lines and poles may be felled.
- Critical Facilities: All critical facilities in Lincoln County are vulnerable to summer storms in the same manner that individual buildings are vulnerable. However, some of the critical facilities throughout the County have back-up generator systems, which allow building systems to continue operating during a power outage.

Severe Winter Storms:

- Buildings: All buildings in Lincoln County are 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 increased load from snow.
- Infrastructure: A 'northeaster', blizzard, or ice storm of the severity that occurs at least once every 3-5 years would have an 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 will be felled.
- Critical facilities: No critical structures were identified as being in danger from a severe winter storm.

Wildfires:

- Buildings: Forest fires would have a tremendous impact on the large number of homes located in the wildland-urban interface. An estimated 33% of the homes in Lincoln County, are 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 Lincoln 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.

Drought:

- Buildings: No buildings were identified as being in danger from a drought.
- Infrastructure: Residential private wells are vulnerable to drought as the water supply may be low and/or depleted during drought conditions. The majority of Lincoln County residents are serviced by private water supply.
- Critical Facilities: No critical facilities were identified as being in danger from a drought.

Pandemic:

- Buildings: No buildings were identified as being in danger from a pandemic.
- Infrastructure: Physical infrastructure (sewer and water) are likely not to be impacted by a pandemic. Broadband, specifically the lack thereof, was an infrastructure issue during the COVID-19 pandemic as non-essential employees and school students were forced to work/learn remotely.
- Critical Facilities: As learned during the COVID-19 Pandemic, hospitals and other medical care facilities can be overwhelmed by the number of ill patients, thus putting strain on maximum occupancy limits, available medical supplies, and staff. The same issues applied to elder care facilities (i.e. assisted living and in-patient nursing homes) and the County jail.

The following chart identifies the type and number of critical facilities in each town in Lincoln County.

Town	Municipal Office	Fire Station	Police Station	Post Office	Public Works	Water Treatment & Storage	Waste-water Treatment	Library	Schools	Comm. Tower	Hospital/ Clinic	Airport
Alna	1	1	0	1	1	0	0	0	1	0	0	0
Boothbay	1	2	0	3	2	1	0	0	0	1	0	0
Boothbay Harbor	1	1	1	2	1	2	1	1	2	1	1	0
Bremen	1	1	0	1	1	0	0	1	0	0	0	0
Bristol	1	3	0	4	1	0	0	1	1	1	0	0
Damariscotta	1	1	1	1	1	3	1	1	2	1	1	0
Dresden	1	2	0	1	2	1	0	1	1	3	0	0
Edgecomb	1	1	0	1	0	0	0	0	1	0	0	0
Jefferson	1	2	0	1	1	0	0	1	1	1	0	0

Monhegan Island Plantation	1	1	0	1	0	4	0	1	1	1	0	0
Newcastle	2	2	0	1	0	1	0	0	1	1	0	0
Nobleboro	1	2	0	1	1	0	0	0	1	1	0	0
Somerville	1	1	0	0	2	0	0	0	1	0	0	0
South Bristol	2	2	0	2	1	0	0	1	1	0	0	0
Southport	1	2	0	1	1	1	0	1	1	0	0	0
Waldoboro	1	1	1	1	3	5	1	1	4	2	2	0
Westport Island	2	1	0	0	0	0	0	0	0	0	0	0
Whitefield	1	3	0	2	1	0	0	0	1	0	1	0
Wiscasset	1	1	1	1	1	1	1	1	3	2	0	1
Total	22	29	4	24	20	15	4	11	23	12	4	1

Historic features. The Maine Historic Preservation Commission identifies short-term and long-term recommendations for including historic features in hazard mitigation. The National Park Service has issued Guidelines for Flood Adaptation for Rehabilitation of Historic Buildings[24], designed to provide information on adapting historic buildings to be more resilient to flooding in a manner while preserving their historic character. Longer-term goals involve mitigation planning around climate change and sea level rise as outlined in Maine's Statewide Historic Preservation Plan[25].

Vulnerability of Future Buildings, Infrastructure, and Critical Facilities

Assessing where future development will occur in the towns in Lincoln County is difficult due to a lack of municipal data, policies, and programs. Most of the Lincoln County towns are very small and rural and do not have planning departments, building codes or a fulltime code enforcement officer (CEO). As documented more fully in Element C1, there are a number of local ordinances that will significantly reduce the vulnerability of future buildings, infrastructure, and critical care facilities to the hazards profiled in this Plan update. Most municipalities have a comprehensive plan, and all have a floodplain management ordinance. All have shoreland zoning ordinances, subdivision regulations, and/or land use ordinances.

The Maine Dept. of Administrative and Financial Services State Economist Demographic Projections[26] (based on 2016 U.S. Census Bureau population estimates) projects population growth in Lincoln County through 2038. The 2019 U.S. Census Bureau population estimate for the County is 34,634 people, estimated to rise to 35,320 people by 2028 (an increase of ± 1.9%).

[24] Guidelines for Flood Adaptation for Rehabilitation of Historic Buildings: https://www.nps.gov/orgs/1739/upload/flood-adaptation-guidelines-2021.pdf
[25] Heritage for the Future: https://www.maine.gov/mhpc/sites/maine.gov.mhpc/files/inline-files/Heritage%20for%20the%20Future%202016-2021.pdf
[26] Maine Department of Administrative and Financial Services State Economist (2019). *Maine State and County Population Projections 2038*. https://www.maine.gov/dafs/economist/sites/maine.gov.dafs.economist/files/inline-files/MaineStateCountyPopulationProjections2038.pdf

Given the minimal rate of population growth projected for Lincoln County, it is anticipated that any future proposed buildings, infrastructure, or critical facilities may reduce their vulnerability to the identified hazards given changes to building codes and/or land use ordinances and the advancement of construction technology and practices. In this assessment we refer to vulnerabilities for all participating jurisdictions unless otherwise noted.

Flooding:

- Buildings: With the notable exception of the coastal communities of Boothbay, Boothbay Harbor, and Bristol, the majority of damages from flooding in Lincoln County are to roads rather than structures. All towns have floodplain management ordinances that provide some control over development in flood zones, including meeting FEMA standards for new construction.
- Infrastructure: Future roads and their associated storm drainage systems would seem to be the most likely category for infrastructure that would be vulnerable to flooding. State and local road construction standards generally ensure a registered professional engineer designs all roads in the public domain. Flooding of future public roads may not be as serious of an issue in Lincoln County.
- Critical facilities: Because of the requirements and a greater awareness of flooding in all communities, future critical facilities may continue to be located outside floodplain areas. The exception may be wastewater treatment plants, due to the need to locate the facilities at lower elevations.

Severe Summer Storm Events:

- Buildings: New buildings in Lincoln County may be less vulnerable to severe summer storms because they are built to meet modern building code and FEMA requirements (where applicable). State-mandated shoreland zoning ordinance regulations for areas within 250 feet of the shoreline of the coast, lakes and ponds, and within 75 feet of streams, limit the location of new buildings in areas prone to coastal erosion and storm surges which often result from Severe Summer Storm events. Damages may include roof damage from falling trees and debris. There will be less interior water damage due to wind-driven heavy rains and because roofs of newer buildings generally are properly designed and roofing materials are more resistant to water infiltration and designed to sustain wind conditions. It is unlikely a Category 1 hurricane (which is historically all that has hit Lincoln County) or high winds will have significant 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 Lincoln County will be vulnerable to summer storms in the same manner individual buildings will be vulnerable. However, some of them may have back-up generator systems, which will allow building systems to continue operating during a power outage.

Severe Winter Storms:

- Buildings: Future buildings in Lincoln County should be less vulnerable to winter storms. Damages may include burst water pipes although newer buildings may be better insulated than older ones, thus being better able to retain heat during longer periods of time

when a power outage occurs. 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 less frequent inasmuch as newer roofs are designed to withstand heavy snow loads. It is unlikely a severe winter storm will have an impact on future structures. This hazard primarily impacts local roads and overhead utility lines.

- 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 Lincoln County will experience much new road construction, with the possible exception of small road segments serving subdivisions.
- Critical Facilities: Future critical facilities in Lincoln County will be vulnerable to winter storms in the same manner that individual buildings will be vulnerable. However, some of them may have back-up generator systems, which will allow heating systems to continue operating during a power outage.

Wildfires:

- Buildings: Wildfires in Lincoln County towns primarily threaten residential structures in the wildland-urban interface. In all Lincoln County communities, homes are allowed to be built in most land use zones. Some communities may decide to provide wildfire protection information to new residents who wish to build new homes at the time they are issued a land use/building permit.
- 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 low growth rate 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.

Drought:

- Buildings: Vulnerabilities of future buildings to a drought are minimal.
- Infrastructure: Future development relying on private wells for water supply are at risk for drought.
- Critical Facilities: Vulnerabilities of future critical facilities to a drought are minimal, unless the facility is not connected to a public water supply.

Pandemic: Vulnerabilities to buildings, infrastructure, and critical facilities from a pandemic are minimal. A strain on existing critical facilities as described in the previous section of this document regarding "existing critical facilities, may occur during a pandemic. Please refer to the Disease and Epidemic Plan within the Lincoln County Emergency Operations Plan for additional information, in Appendix D of this document.

Assessing Vulnerability: Estimating Potential Losses: The Lincoln County Emergency Management Agency and Hazard Mitigation Planning Team used historical data to estimate the potential dollar losses if the County were to experience flooding, sever summer storms, severe winter storms, wildfires, drought, and pandemic, the most likely hazards to occur in the County. The vulnerable structures and facilities were identified earlier in the planning process.

The Lincoln County Hazard Mitigation Planning Team estimated the potential losses from Flooding, Severe Summer Storms, Severe Winter Storms, Wildfires, Drought, and Pandemic. The results are listed on the following pages.

In 2019, the North East States Emergency Consortium (NESEC) completed quantitative reports on the potential impacts of major flooding, hurricane, and earthquake events. Results of these reports are summarized in this report, and the full NESEC reports are provided in Appendix F, G, and H (the earthquake report is provided only as an annex because this hazard is not profiled for Lincoln County). Reports were generated using Hazus, a software program provided by FEMA for modeling large hazards, community vulnerabilities, and losses associated with impacts. Hazus report summaries are provided after presentation of the loss models developed by the LCHMP Planning Team.

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 2019 Census information and the 2020 Consumer Price Index.

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	1993 = 144.5	2008 = 215.3
1954 = 26.9	1994 = 148.2	2009 = 214.5
1980 = 82.4	1995 = 152.4	2010 = 218.1
1981 = 90.9	1996 = 156.9	2011 = 224.9
1982 = 96.5	1997 = 160.5	2012 = 229.6
1983 = 99.6	1998 = 163.0	2013 = 233.0
1984 = 103.9	1999 = 166.6	2014 = 236.7
1985 = 107.6	2000 = 172.2	2015 = 237.0
1986 = 109.6	2001 = 177.1	2016 = 240.0
1987 = 113.6	2002 = 179.9	2017 = 245.1
1988 = 118.3	2003 = 184.0	2018 = 251.1
1989 = 124.0	2004 = 188.9	2019 = 255.6
1990 = 130.7	2005 = 195.3	**2020 = 258.8**

1991 = 136.2	2006 = 201.6	
1992 = 140.3	2007 = 207.3	

Flooding. This plan uses worst-case, real-life damages to calculate potential flood losses, and assumes historic patterns will hold for the future. The worst case flood is the Patriot's Day storm of 2007, which resulted in a Presidential Disaster Declaration of about $22 million in damages to 13 counties. Using the Consumer Price Index (CPI), the damages in 2020 dollars would be about $27,465,509 ($22 million multiplied by $258.8 [the CPI for 2020], and divided by $207.3 [the CPI for 2007]).

Damages in Lincoln County for the Patriot's Day Storm amounted to $1.105 million, which would be $1.379 million in 2020 dollars.

The methodology for calculating potential losses in Lincoln County is to assume the greater of:

1) Actual damages from the Patriot's Day storm, updated using the Consumer Price Index (column B in the table on the next page),
2) Actual damages from flooding other than the Patriot's Day Storm, updated using the Consumer Price Index, when they are greater than the updated damages from the Patriot's Day Storm (column C),
3) Flood losses based on $25.64 per capita (column D). The $25.64 is calculated by taking the population of the counties which suffered damages in the Patriot's Day Storm (1,108,224 – the population of the State, using 2019 Census data, exclusive of Aroostook, Penobscot and Piscataquis Counties, which were not included in the declaration) and dividing it into total Patriot's Day storm damages in 2020 dollars ($28,419,311) to get a per capita cost of $25.64. Each town's population is multiplied by $25.64 to get potential damages.

The maximum flood loss (column E) is the greater of columns B, C, or D. In most cases, column B results in the highest loss estimate.

Potential Flood Losses in Lincoln County					
Municipality	**Column A:** Actual Patriot's Day Losses (2007 dollars)	**Column B:** Updated Patriot's Day Losses (2020 dollars using CPI)	**Column C:** Other Flood Losses, Updated to 2020 dollars using CPI, when higher than 2007 losses)	**Column D:** Flood Losses Based on $25.64/Capita	**Column E:** Maximum Potential Flood Loss (i.e., the greater of columns B, C, or D)
Alna	$24,871	$31,049	$39,952	$22,409	$39,952
Boothbay	$151,713	$189,403	-	$80,253	$189,403
Boothbay Harbor	$73,620	$91,909	-	$56,382	$91,909
Bremen	$32,971	$41,162	-	$20,512	$41,162
Bristol	$148,137	$184,939	-	$70,638	$184,939

Damariscotta	$38,394	$47,932	-	$55,459	$55,459
Dresden	$34,355	$42,889	-	$42,690	$42,889
Edgecomb	$98,908	$123,479	-	$32,126	$123,479
Hibbert's Gore (UT)	-	-	-	$25.64	$25.64
Jefferson	$12,105	$15,112	$616,275	$67,330	$616,275
Louds Island and Lincoln County Islands (UT)	-	-	-	$0	$0
Monhegan Island Plantation	$28,741	$35,881	-	$1,384	$35,881
Newcastle	$178,185	$222,451	-	$46,023	$222,451
Nobleboro	$4,472	$5,582	$22,700	$41,972	$41,972
Somerville	$48,086	$60,032	$132,341	$14,384	$132,341
South Bristol	$54,290	$67,777	-	$22,409	$67,777
Southport	$13,385	$16,710	-	$15,307	$16,710
Waldoboro	$78,128	$97,537	$162,887	$129,328	$162,887
Westport Island	$18,682	$23,323	$43,168	$16,922	$43,168
Whitefield	$55,144	$68,843	-	$57,818	$68,843
Wiscasset	$11,448	$14,292	$72,011	$94,791	$94,791
TOTAL	**$1,105,635**	**$1,380,310**	**$1,089,334**	**$825,037**	**$2,272,468**

1993 flood damages, updated using CPI
2005 flood damages, updated using CPI
2008 flood damages, updated using CPI
2010 flood damages, updated using CPI

No Damages were reports for Louds Island and Lincoln County Islands

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 Lincoln County, as noted earlier. Worst-case, real-life damages were used to calculate potential damages from hurricanes. The most recent, devastating hurricane to hit Lincoln County was Hurricane Carol in 1954. In 2020 dollars this would be $134.69 (multiply $14 by the 2020 CPI of 258.8 and divide by the 1954 CPI of 26.9). There has been a substantial amount of primary and secondary home and commercial development in these six counties since 1954, and the population of these six counties increased to 652,621 people, per 2019 Census Data. The per capita damages should therefore be increased to $250 (multiply $134.69 by 652,621 and divide by 351,465).

Potential Hurricane Damages in Lincoln County

Town	Year-Round Population	Potential Hurricane Damages (Population x $250)
Alna	734	$183,500
Boothbay	3,173	$793,250
Boothbay Harbor	2,213	$553,250
Bremen	807	$201,750
Bristol	2,787	$696,750
Damariscotta	2,151	$537,750
Dresden	1,678	$419,500
Edgecomb	1,262	$315,500
Hibbert's Gore (UT)	1	$250
Jefferson	2,455	$613,750
Louds Island and Lincoln County Islands (UT)	0	$0
Monhegan Island Plantation	68	$17,000
Newcastle	1,767	$441,750
Nobleboro	1,653	$413,250
Somerville	565	$141,250
South Bristol	878	$219,500
Southport	600	$150,000
Waldoboro	5,069	$1,267,250
Westport Island	730	$182,500
Whitefield	2,280	$570,000
Wiscasset	3,763	$940,750
		TOTAL = $8,658,500

Severe Winter Storms. This plan uses worst-case, real-life damages to calculate potential winter storm damages, and assumes that historical patterns will hold for the future. For Lincoln County, the worst storm is the ice storm of 1998, which resulted in a statewide Presidential Disaster Declaration of $47,748,466. The actual damages were closer to $100,000,000 because the Disaster Declaration did not cover damages to power lines and private structures. Using the Consumer Price Index, the $47.7 million in damages would be $75.7 million in 2020 dollars (multiply 47.7 million by 258.8 – the CPI for 2020 – and divide by 163.0 – the CPI for 1998). The 1998 damages in Lincoln County totaled $292,000 (far less than some interior counties), which would be $463,617 in 2020 dollars.

The methodology for calculating potential losses in Lincoln County is to assume the greater of:

1. Actual damages updated using the Consumer Price Index (column B in the table below), or

2. Winter storm losses based on $56 per capita (Column C in the table below). The $56 is calculated by taking the population of the State (1,344,212) and dividing it into total 1998 ice storm damages in 2020 dollars ($75.7 million) to get a per capita cost of $56. Each town's population is multiplied by $56 to get potential damages.

The maximum winter storm loss (Column D) is the greater of Column B or C.

Potential Winter Storm Losses in Lincoln County				
Town	**Column A**: Actual 1998 Ice Strom Damages	**Column B**: Updated Ice Storm Losses Using CPI for 2020	**Column C**: Storm Losses Based on $56 Per Capita	**Column D**: Maximum Potential Winter Storm Loss
Alna	$3,135	$4,977	$41,104	$41,104
Boothbay	$24,610	$39,074	$177,688	$177,688
Boothbay Harbor	$10,473	$16,628	$123,928	$123,928
Bremen	$1,942	$3,083	$45,192	$45,192
Bristol	$5,593	$8,880	$156,072	$156,072
Damariscotta	$8,969	$14,240	$120,456	$120,456
Dresden	$30,449	$48,344	$93,968	$93,968
Edgecomb	$26,858	$42,643	$70,672	$70,672
Hibbert's Gore	$0	$0	$56	$56
Jefferson	$14,286	$22,682	$137,480	$137,480
Louds Island and Lincoln County Islands	$0	$0	$0	$0
Monhegan Island Plantation	$0	$0	$3,808	$3,808
Newcastle	$1,370	$2,175	$98,952	$98,952
Nobleboro	$5,948	$9,443	$92,568	$92,568
Somerville	$29,579	$46,963	$31,640	$46,963
South Bristol	$0	$0	$49,168	$49,168
Southport	$0	$0	$33,600	$33,600
Waldoboro	$48,113	$76,390	$283,864	$283,864
Westport Island	$4,933	$7,832	$40,880	$40,880
Whitefield	$61,607	$97,815	$127,680	$127,680
Wiscasset	$13,990	$22,212	$210,728	$210,728
TOTAL	**$291,855**	**$463,381**	**$1,939,504**	**$1,954,827**

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 damage in 2020

dollars would be about $348.2 million (multiply $30 million by 258.8 – the CPI for 2020 – 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 occur in Maine during the five-year period covered by this plan is low.

The methodology for calculating potential wildfire losses in Lincoln County is based on the damages that occurred in the 1947 fire in Cumberland, Hancock, Oxford, and York Counties. The population of these counties is 615,606. Divide $348.2 million (the 1947 fire damages in 2020 dollars) by 615,606 to get a per capita cost of $565 to get potential wildfire damages.

Potential Wildfire Damages in Lincoln County		
Town	Year-Round Population	Potential Wildfire Damages (Population x $565)
Alna	734	$414,710
Boothbay	3,173	$1,792,745
Boothbay Harbor	2,213	$1,250,345
Bremen	807	$455,955
Bristol	2,787	$1,574,655
Damariscotta	2,151	$1,215,315
Dresden	1,678	$948,070
Edgecomb	1,262	$713,030
Hibbert's Gore (UT)	1	$565
Jefferson	2,455	$1,387,075
Louds Island and Lincoln County Islands (UT)	0	$0
Monhegan Island Plantation	68	$38,420
Newcastle	1,767	$998,355
Nobleboro	1,653	$933,945
Somerville	565	$319,225
South Bristol	878	$496,070
Southport	600	$339,000
Waldoboro	5,069	$2,863,985
Westport Island	730	$412,450
Whitefield	2,280	$1,288,200
Wiscasset	3,763	$2,126,095
		TOTAL = $19,568,210

Drought. One of the biggest economic impacts from drought is typically agricultural losses. Using information from USDA's Census of Agriculture[27], the Planning Team was able to determine total crop sales in Lincoln County. Assuming drought will directly impact sales through reduced quality/failure of crops, the following table estimates reductions in agricultural commodity sales to estimate potential losses.

Potential Agriculture Commodity Losses (Adjusted Using 2020 CPI)	
Total Commodity Sales from Lincoln County Agriculture	$13,602,046
10% Reduction in Commodity Value	$12,241,842 *(A loss of $1,360,204)*
25% Reduction in Commodity Value	$10,201,535 *(A loss of $3,400,511)*
50% Reduction in Commodity Value	$6,801,023 *(A loss of $6,801,023)*
75% Reduction in Commodity Value	$3,400,512 *(A loss of $10,201,534)*

Pandemic. The State of Maine received $4.5 billion from the American Rescue Plan (ARP) in 2021for impacts caused by the COVID-19 Pandemic. The methodology for calculating estimated losses by Town is to assume COVID-19 losses based on actual ARP funds issued to each town (column A); pandemic losses based on County ARP funds based on per capita of $195 (column B) and pandemic losses based on Maine State ARP funds based on per capita of $3,347.

- The actual American Rescue Funds issued to Towns is what each Town received in ARP funds, issued by the Federal Government and distributed to municipalities by the State of Maine, in August and September of 2021.
- The $195 per capita for County ARP funds is calculated by taking the population of Lincoln County (34,634) and dividing it into the total American Rescue Plan relief issued to Lincoln County ($6,776,899 million) to get a per capita cost of $195. Each town's population is multiplied by $193 to get estimated damages.
- The $3,347 per capita for State ARP funds is calculated by taking the population of the State (1,344,212) and dividing it into the total American Rescue Plan relief issued to Maine ($4.5 billion) to get a per capita cost of $3,347. Each town's population is multiplied by $3,347 to get estimated damages.

As you will see in the table below Column C "Pandemic Losses based on State ARP Per Capita (Population x $3,347)" is the most extreme of the possible losses reviewed.

Potential Pandemic Losses in Lincoln County

[27] United States Department of Agriculture (2017). *National Agricultural Statistics Service*. https://www.nass.usda.gov/Quick_Stats/CDQT/chapter/2/table/1/state/ME/county/015/year/2017. Accessed 08/31/2021.

Town	Year-Round Population	A. Actual ARP Funds Issued to Towns (2021)	B. Pandemic Losses Based on County ARP Per Capita (Population x $195)	C. Pandemic Losses Based on State ARP Per Capita (Population x $3,347)
Alna	734	$73,178	$143,130	$2,456,698
Boothbay	3,173	$220,632	$618,735	$10,620,031
Boothbay Harbor	2,213	$316,342	$431,535	$7,406,911
Bremen	807	$80,456	$157,365	$2,701,029
Bristol	2,787	$277,858	$543,465	$9,328,089
Damariscotta	2,151	$214,450	$419,445	$7,199,397
Dresden	1,678	$167,293	$327,210	$5,616,266
Edgecomb	1,262	$125,819	$246,090	$4,223,914
Hibbert's Gore (UT)	1	---	$195	$3,347
Jefferson	2,455	$244,759	$478,725	$8,216,885
Louds Island and Lincoln County Islands (UT)	0	$0	$0	$0
Monhegan Island Plantation	68	6,779	$13,260	$227,596
Newcastle	1,767	$176,166	$344,565	$5,914,149
Nobleboro	1,653	$164,801	$322,335	$5,532,591
Somerville	565	$56,329	$110,175	$1,891,055
South Bristol	878	$87,535	$171,210	$2,938,666
Southport	600	$59,819	$117,000	$2,008,200
Waldoboro	5,069	$505,369	$988,455	$16,965,943
Westport Island	730	$72,780	$142,350	$2,443,310
Whitefield	2,280	$227,312	$444,600	$7,631,160
Wiscasset	3,763	$375,164	$733,785	$12,594,761
TOTAL		**$3,452,841**	**$15,653,630**	**$115,919,998**

NESEC Hazus Flood and Hurricane Impact Analysis Reports: The purpose of Hazus Impact Analysis Reports is to provide emergency managers and other government decision makers with an estimate of the potential impact of moderate to large hazardous events affecting Lincoln County. Hazus was developed by FEMA to aid in the calculation, mapping, and communication of model disaster data. These reports provide a rough estimate of potential damage and other human and economic impacts resulting from hypothetical natural disaster scenarios. Each Hazus model uses inventory information (buildings, infrastructure, and population), hazard extent and intensity data, and

damage functions to estimate the impacts of disasters. Estimated impacts vary by model, but include building damages, economic losses, displaced households, casualties, debris, and the loss of function for essential facilities.

Flooding: The Flood Impact Analysis Report was generated based on the impacts of a major flooding event that probabilistically has a 1 in 500 (0.2%) chance of occurring in a year. This model differs from historic data and the LCHMP Planning Team models in that there may be no comparable event in recorded history for Lincoln County.

Hazus Flood loss table:

Capital Stock Losses				Income Losses				
Building Loss	Contents Loss	Inventory Loss	Building Loss Ratio %	Relocation Loss	Capital Related Loss	Wages Losses	Rental Income Loss	**Total Loss**
$5,025,000	$4,191,000	$81,000	0.80	$1,047,000	$1,419,000	$3,063,000	$436,000	**$15,262,000**
Total Estimated Direct Losses:				**$15, 262,000**				
Essential Facilities Lost:				**0**				
Estimated Debris (Tons):				**1,294**				
Number of Displaced Households:				**51**				

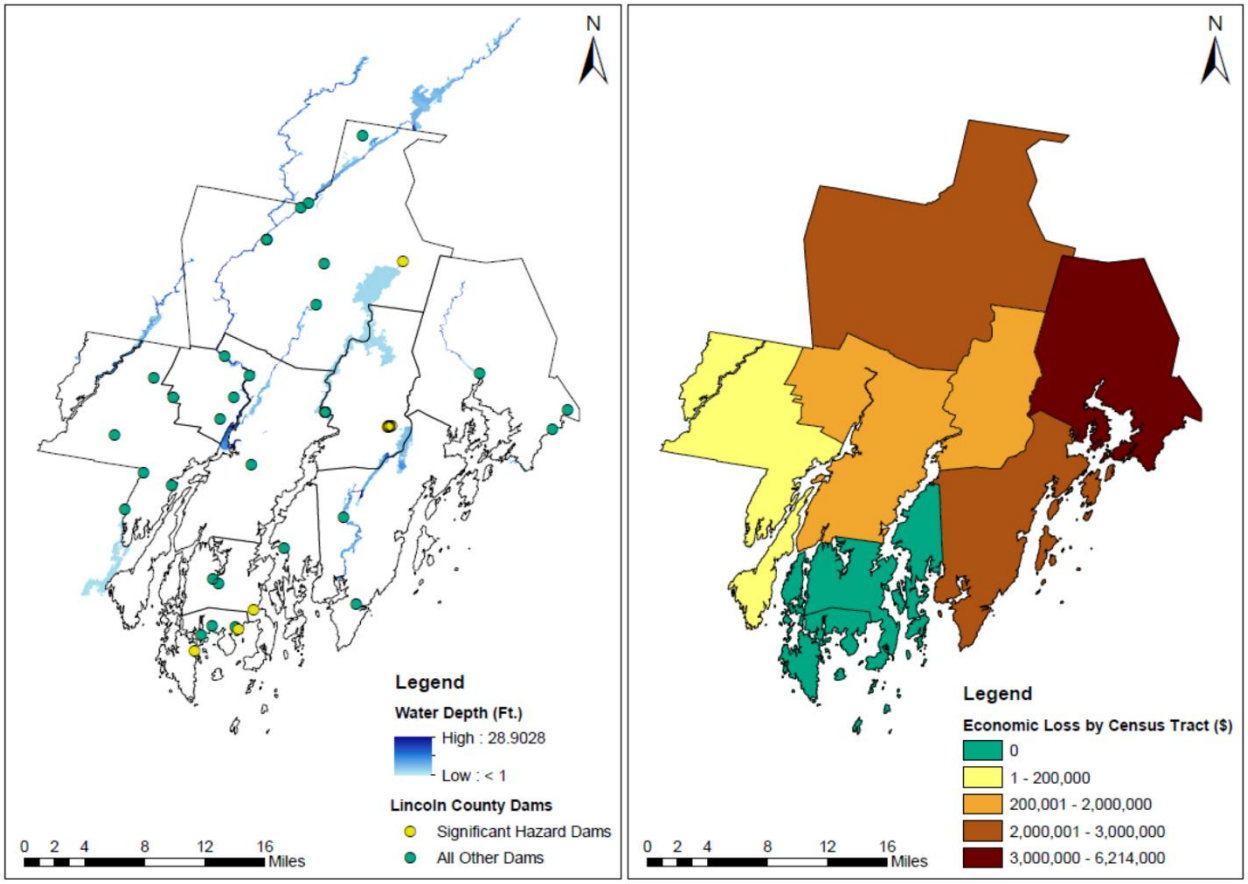
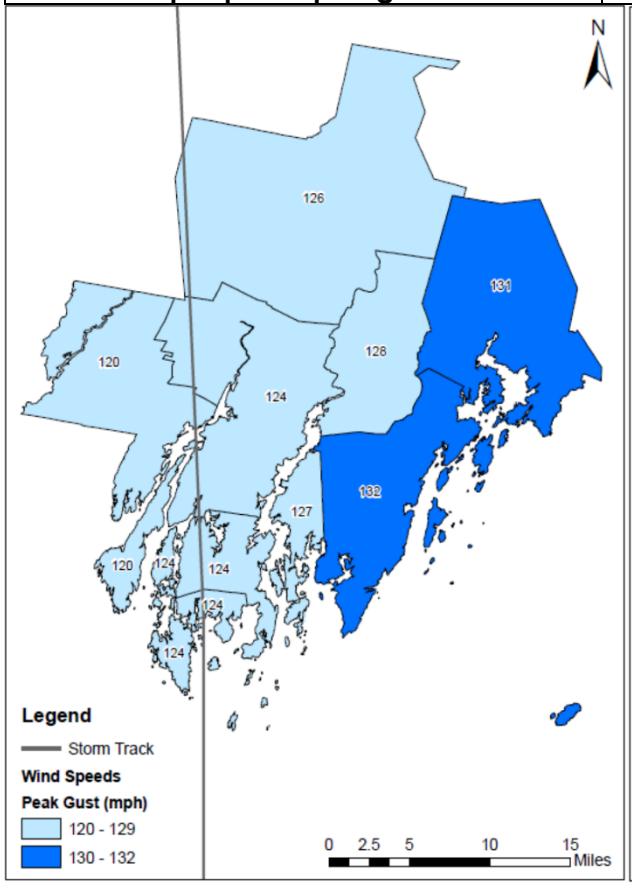


Figure: Hazus flood depths (left) and economic loss by Census tract for 500-year event.

Severe Summer Storm/Hurricane: The Hurricane Impact Analysis Report was generated based on the impacts of a hypothetical Category 2 hurricane that makes landfall off the coast of Maine. It is important to note that this event does not necessarily represent the greatest impact a hurricane could have on Lincoln County, Maine. Though the chances for a severe hurricane occurring in the Northeast are low to moderate, any hurricane that tracks along the East Coast has the potential to negatively impact Maine. This model differs from historic data and the LCHMP Planning Team models in that is no comparable event in recorded history for Lincoln County.

Hazus hurricane loss table:

Capital Stock Losses				
Building Loss	Contents Loss	Inventory Loss	Loss Ratio %	**Total Loss**
$631,553,000	$290,039,000	$2,881,000	12.12	**$924,453,000**
Total Estimated Direct Losses:				**$924,453,000**
Essential Facilities Functionality:				**100% (surge), 0-100% (wind)**
Estimated Debris (Tons):				**1,100,741**
Number of Displaced Households:				**628**
Number of people requiring wind shelter				**282**



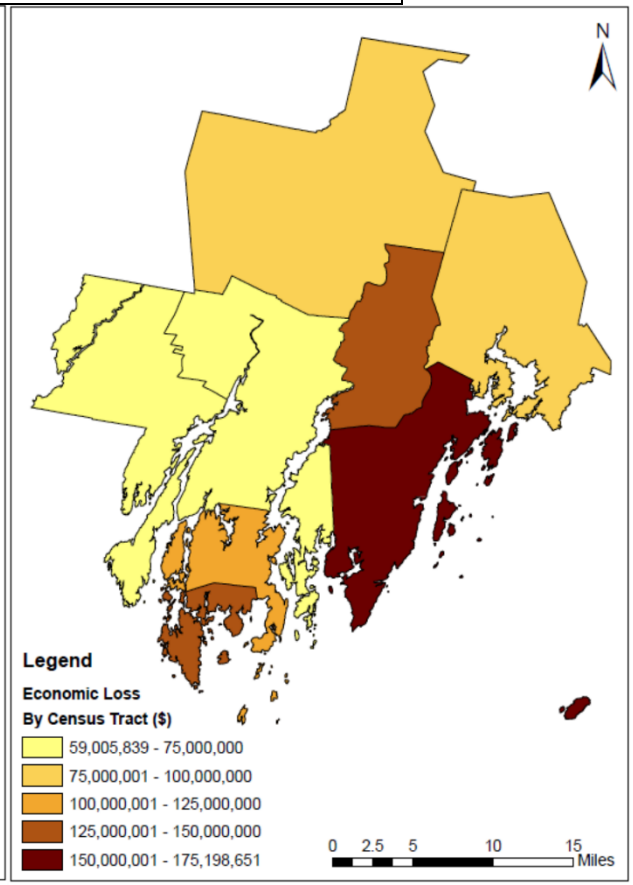


Figure: Hazus peak gust wind speeds with storm track (left) and total economic losses by Census tract (right) for a Category 2 hurricane landfall in Lincoln County.

Assessing Vulnerability: Analyzing Development Trends; The Planning Team is not aware of any changes in development that would necessitate revisions to this Plan. Lincoln County is located along the mid-coastline of Maine and is largely rural. A majority of the County's land use is designated as rural and is primarily forestland or farmland. The largest town is Waldoboro, having a year-round population of 5,044 residents and is located near the coast on the eastern end of the County. There are no suburbs in Lincoln County. The land uses within the County generally consist of Residential, Resource Protection, Agricultural, Industrial, and Commercial areas.

Lincoln County's population has grown marginally over the past decade. The 2010 Census recorded 34,445 residents and the 2019 estimate is 34,634 residents (+0.5% population percent change). Using FEMA's Resilience Analysis and Planning Tool (RAPT)[28], it was determined 27.08% of Lincoln County's population is over the age of 65. The percentage of the County's population with a disability is 16.94%. The percentage of the population without a vehicle is 4.94%. Given that Lincoln County is sometimes referred to as "the oldest county in the oldest state in the nation", these statistics are important to note inasmuch as such populations may be vulnerable to future hazards.

The majority of residential development and population increase has occurred in coastal communities. Commercial growth has been primarily located on the U.S. Route 1 transportation corridor in the towns of Damariscotta, Newcastle, Waldoboro, and Wiscasset. This trend is expected to continue.

The State of Maine Legislature enacted the Growth Management Act in 1989 (Title 30-A, Chapter 187, subchapter 2) which requires each community to develop a municipal comprehensive plan. The municipal comprehensive plans allow towns to decide where future land development should occur in a community, taking into account the town's environment, physical constraints, location of utility services, similarity to existing development, and proximity to flood zone areas.

Municipalities must review existing conditions by performing an inventory and predict future needs in order to develop their own plans, policies, and ordinances. A local land use ordinance, if adopted, must be based on and be consistent with the municipal comprehensive plan. (Note, it is no longer a requirement that Towns have a zoning ordinance in order for their comprehensive plan to be approved by the State.)

All towns in Lincoln County have adopted floodplain management ordinances and shoreland zoning ordinances, either locally adopted or state imposed (if the community has not enacted a local shoreland zoning ordinance meeting state minimum standards). Many communities also have other land use ordinances such as subdivision and site plan review.

[28] https://www.fema.gov/emergency-managers/practitioners/resilience-analysis-and-planning-tool

The chart below lists the land use districts currently in effect in Lincoln County communities.

Flooding may potentially impact all land use areas and zones within the 19 communities in Lincoln County. This hazard has the primary impact of potentially shutting down transportation, since it is primarily the roads that are subject to flooding in the County. This could impact business, industry, commerce, and schools, as well as delay many social and emergency services.

All Lincoln County municipalities have adopted floodplain ordinances to ensure FEMA development standards are applied to new construction within flood zones. Monhegan does not have Island-specific ordinances, such land use standards are administered by the Maine Land Use Planning Commission (LUPC).

LUPC provides permitting, planning, zoning, and code enforcement services for the unorganized territories (UTs), including Monhegan Island Plantation. The Commission's regulations are in Chapter 10, Land Use Districts and Standards[29]. Some mitigation actions in UTs may be subject to land use standards, or potentially require a permit from LUPC. Examples include installing a temporary flood barrier, hardening shorelines around features, or alterations to structures that may be non-conforming due to setbacks from rivers or roads. LUPC is engaged in enhancing requirements for development activities in flood prone areas and improving overall consistency with FEMA regulations in UTs.

Preexisting commercial developments within flood zones have been in place for decades and may be upgraded to meet floodplain ordinances as the structures are renovated and/or replaced. Additionally, there are a number of homes and seasonal camps located within flood zones. As these properties are mortgaged and/or substantially improved (as defined by FEMA), they may need to be upgraded to meet the floodplain ordinances.

Severe summer storms may impact all land use areas and zones within the 19 communities in Lincoln County. This hazard has the primary impact of potentially shutting down transportation, since it is primarily the roads that are subject to the effects of high winds and the subsequent toppling of trees onto roads. This could impact business, industry, commerce and schools and delay many social and emergency services.

Severe winter storms may impact all land use areas and zones within the 19 communities in Lincoln County. This hazard has the primary impact of potentially shutting down transportation and power, which will shut down business, industry, commerce and schools and stop all social and emergency services.

Wildfires may have an impact on the residential properties located within the wildland-urban interface. Because Lincoln County is a very densely forested, sparsely populated area, there are a great number of homes that are at risk to destruction by forest fires. Currently, no municipality in Lincoln County is known to have wildfire restrictions or requirements on residential development.

[29] https://www.maine.gov/dacf/lupc/laws_rules/ch10.html

Drought may have an impact on residential properties, some commercial sites, and on agriculture lands within the County. Agriculture production and residential water supply is most at risk.

Pandemic may have a minimal impact on vulnerability, considering the small-expected increase in development in the County and negligible impact on transmission. A full description and operations protocols are contained in the Lincoln County Emergency Operations Plan – Diseases and Epidemics (Appendix D of this document).

The communities of Lincoln County understand that flooding, severe summer storms, severe winter storms, wildfires, and drought can have a major impact on their lives and way of life. Nearly all Lincoln County municipalities have land use ordinances which strive to manage development in flood zones, coastal storm surge areas, and along major transportation routes.

The zoning districts known to be in effect in Lincoln County are:

Municipality	Land Use Districts
Alna	Shoreland Zone: Resource Protection; Stream Protection; Limited Residential; Head of Tide Village; Alewife Fishery
Boothbay	Residential Districts: Residential; Coastal Residential Mixed Use Districts: Boothbay Village Center; Boothbay Village Fringe; Boothbay Village Mixed-Use; East Boothbay Village; Scenic Gateway; Rural Mixed Use Commercial Districts: Commercial Corridor; Manufacturing/Business; Maritime Commercial Natural Resources Districts: Water Reservoirs Protection; Water Reservoirs Protection District – 27; Wellhead Protection Overlay Districts: Watershed Protection Overlay District; Bigelow Laboratory Contract Zone Shoreland Zoning Districts: Shoreland Zone; Resource Protection; Stream Protection
Boothbay Harbor	Land Use Districts: General Residential; Special Residential; Downtown Business A, B, and C; Limited Commercial/Maritime District; Working Waterfront; General Business Shoreland Zoning Districts: Resource Protection; Shoreland; Stream Protection Overlay
Bremen	Shoreland Zoning Districts: Residential; Commercial; Fisheries & Maritime Activities; Resource Protection; Stream Protection
Bristol	Shoreland Zoning Districts: Residential; Resource Protection; Public Recreation; Village; Stream Protection
Damariscotta	Land Use Districts: C-1; C-2; Medical; Municipal; Residential; Rural; Wireless Shoreland Zoning Districts: Commercial; Limited Commercial A; Limited Commercial B; Residential; Resource Protection; Stream Protection
Dresden	Land Use Districts: Dresden Mills Village; General Use; Rural Living Shoreland Zoning Districts: Resource Protection; Stream Protection; Limited Residential Overlays: Water Resources Management
Edgecomb	Land Use Districts: Edgecomb Gateway; Edgecomb Thoroughfare; Commercial Growth; Route 27 Corridor, Areas I, II, and III; Woodland; Rural; Marine Shoreland Zoning District: Stream Protection; Resource Protection
Jefferson	Land Use Districts: Limited Residential; Limited Commercial; General Development Shoreland Zoning District: Stream Protection; Resource Protection

Monhegan Island Plantation	Land Use Districts (*Administered by LUPC*): General; Maritime; Residential; Recreation; Aquifer Recharge; Soils & Geology; Shore Lands; Unusual Area; Wetlands
Newcastle	Land Use Districts: Rural; Neighborhood Residential; Neighborhood Business; Village Residential; Village Business; Town Center Special Land Use Districts: Historic; Conservation; Highway Commercial; Rural Highway; Campus; Marine; Fabrication Shoreland Zoning Districts: Resource Protection; Limited Residential; Limited Commercial; Maritime Activities; Stream Protection
Nobleboro	Shoreland Zoning Districts: Limited Residential; Resource Protection; Stream Protection
Somerville	Land Use Districts: Development; Management Shoreland Zoning Districts: Limited Residential; Resource Protection; Stream Protection
South Bristol	Shoreland Zoning Districts: General Development; Freshwater; Limited Commercial; Residential; Resource Protection
Southport	Land Use Districts: Growth; Squirrel Island; Residential Shoreland Zoning Districts: Resource Protection
Waldoboro	Land Use Districts: Downtown Business; Historic Village; Industrial; Residential; Route 1 Commercial A; Route 1 Commercial B; Rural; Rural Village Business; Village Overlay: Wellhead Overlay Shoreland Zoning Districts: Stream Protection; Resource Protection; Limited Residential; Limited Commercial; General Development; Commercial; Fisheries/Maritime Activities
Westport Island	Land Use/Shoreland Zoning Districts: Resource Protection; Limited Development; Limited Residential/Commercial; Commercial Fisheries/Marine Activities
Whitefield	Shoreland Zoning Districts: Resource Protection; Limited Residential; Limited Commercial; General Development; Commercial Fisheries/Maritime Activities; Stream Protection
Wiscasset	Land Use Districts: Village 1; Village 2; Residential; Route 1 Commercial; Nequasset Watershed; Rural Shoreland Zoning Districts: Resource Protection District; Limited Commercial District; Business District I, Business District II; Village Waterfront District; Marine Overlay District; Stream Protection District

Multi-Jurisdictional Risk Assessment: Lincoln County is a small Maine county of 34,634 people (*per 2019 ACS data*) living in 456 square miles located along the mid-coast of Maine. There are 19 municipalities within the County. Municipalities contributed to the risk assessment analyses performed for the Lincoln County Hazard Mitigation Plan by completing the risk assessment survey, speaking with the Planning Team, and/or attending the meetings described in Element A of this Plan.

The Planning Team identified flooding as the most significant risk to the entire County, followed in severity by severe summer storms, severe winter storms, wildfires, drought, and pandemic. The rankings of the first four hazards remain the same from the 2016 Plan. Drought and pandemic were added in 2021 due to the recent drought conditions experienced in Maine over the past few years, as well as in response to the COVID-19 pandemic.

Tracking Recent Development: Hazard Mitigation Plans must include an assessment of changes in regional development that may impact the vulnerability of people and property to hazards. Assessing vulnerability in Lincoln County is a high priority because of the proximity of its communities to riverine and coastal hazards. A remote method of tracking development in a community is to use the State of Maine's

E911 Addresses Feature. Developed to support emergency services, this database provides an authoritative, frequently updated record of addressable structures and other landmark locations for the entire state. [30]
Though this resource is authoritative, it has limited use for tracking changes in development over time due to variable improvements in record keeping over several years. Changes in development reported here are therefore assumed to be a best estimate, where the true amount of development is likely to be less than reported. This is especially true for rural areas where address reporting is limited. For example, the % change in addressable structures reported in this table (1,591, 6.97% increase) far exceeds the change in number of households reported by the recent 2020 U.S. Census (115 new households, 0.48% increase in housing units since 2010),[31][32] suggesting that improved record keeping has skewed the change in addressable structures. Though the address database includes more than just residential structures, there have also been no major commercial/industrial development projects reported in the county. Use of data from 2019 onwards is preferred because record keeping trends stabilize at that time. The earliest records of addressable structures in this database are from 2008. Further, there is no guarantee that new addresses represent new residential structures.

Region	Number of addressable structures		Change in addressable structures	% change in addressable structures
	2019	***2021***		
Lincoln County	23,431	25,022	1,591	**6.79%**
				% of total change in addressable structures
Special Flood Hazard Areas (SFHA)	589	593	4	*0.25%*
Hurricane Evacuation Zones (HEZ)	8,493	8,692	199	*12.51%*
SFHA *and* HEZ	451	437	-14	*-0.88%*

According to this study, only a small percentage of development in Cumberland County has occurred in hazard-prone areas. As this table demonstrates, the total estimated number of addressable structures in Lincoln County has increased by 6.79% from January 2019 to September 2021. Of this increase in development, 4 (0.25%) of these new addresses are located in special flood hazard areas (SFHAs) and 199 (12.51%) of new addresses are located in hurricane evacuation zones (HEZs). There has been a net decrease of 14 addressable structures (-0.88%) located in both SFHAs and HEZs, suggesting that the small increase in development in SHFAs has occurred further inland rather than immediately along the coast where flooding, storm surge, and tropical storm winds are more likely to occur.

[30] Maine E911 Addresses Feature: https://maine.hub.arcgis.com/datasets/c1de8b6877114e109980972b4250a883_0/about

[31] U.S. Census Housing 2020 Occupancy Status: https://data.census.gov/cedsci/table?q=&g=0500000US23015&y=2020&d=DEC%20Redistricting%20Data%20%28PL%2094-171%29&tid=DECENNIALPL2020.H1

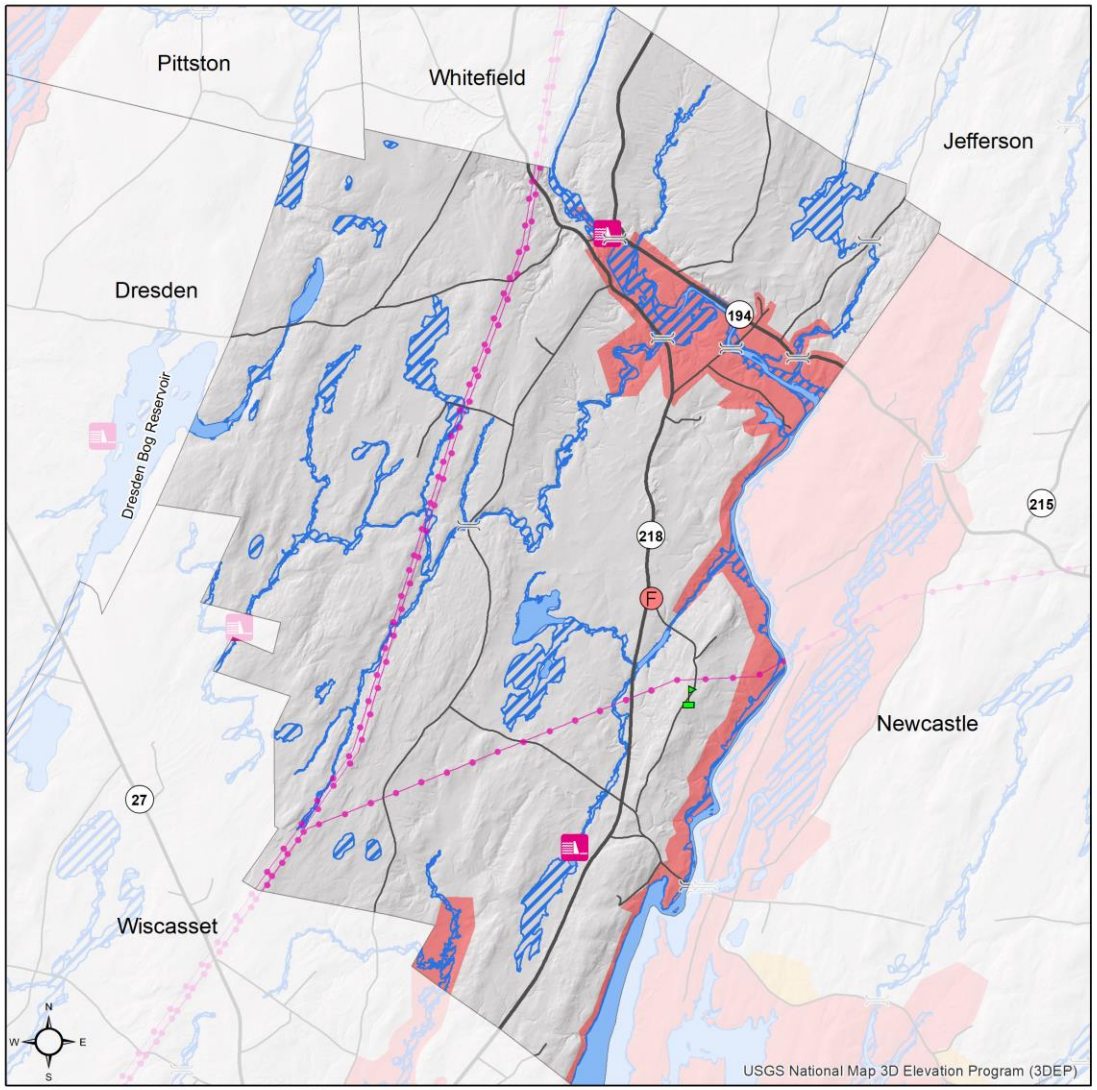
[32] U.S. Census Housing 2010 Occupancy Status: https://data.census.gov/cedsci/table?q=&g=0500000US23015&y=2010&d=DEC%20Redistricting%20Data%20%28PL%2094-171%29&tid=DECENNIALPL2010.H1

Though the increase of addresses in HEZs appears to be large, 1) according to NWS the probability of a Category 1 or 2 hurricane making landfall in coastal Maine is low, and 2) predesignated evacuation zones far exceed the smaller areas where storm surge is truly expected to cause damage (refer to Municipal Base Maps). As a result, there are currently no examples of municipal ordinances based on development in HEZs in Maine. However, communities are encouraged to implement mitigation actions that would improve standards of construction and development to reduce overall risks of storm-related flooding and wind damage, respectively. All jurisdictions in Lincoln County provide a solid basis for development by participating in NFIP and enforcing local floodplain ordinances.

Statewide measures are being taken in response to development in HEZs. The Maine Emergency Management Agency has recently published an online dashboard to help local residents identify if their home is located in a Hurricane Evacuation Zone. In the unlikely event that a hurricane makes landfall along coastal Maine, residents will be able to prepare by learning the evacuation routes available to them, how to receive information on evacuation orders, and finding other resources to help reduce their overall risk[33].

Municipal Base Maps: This section contains a county base map and base maps of the eighteen (18) municipalities, one (1) Plantation, and two (2) unorganized territories of Lincoln County. Base maps include information on the locations of critical facilities, roads, bridges, transmission lines, and other infrastructure, in addition to 100-year riverine and coastal flood zones and hurricane evacuation zones in each jurisdiction.

[33] Maine Hurricane Evacuation Dashboard: https://storymaps.arcgis.com/stories/4fb502bf0ea6467693ff4191a1859e92



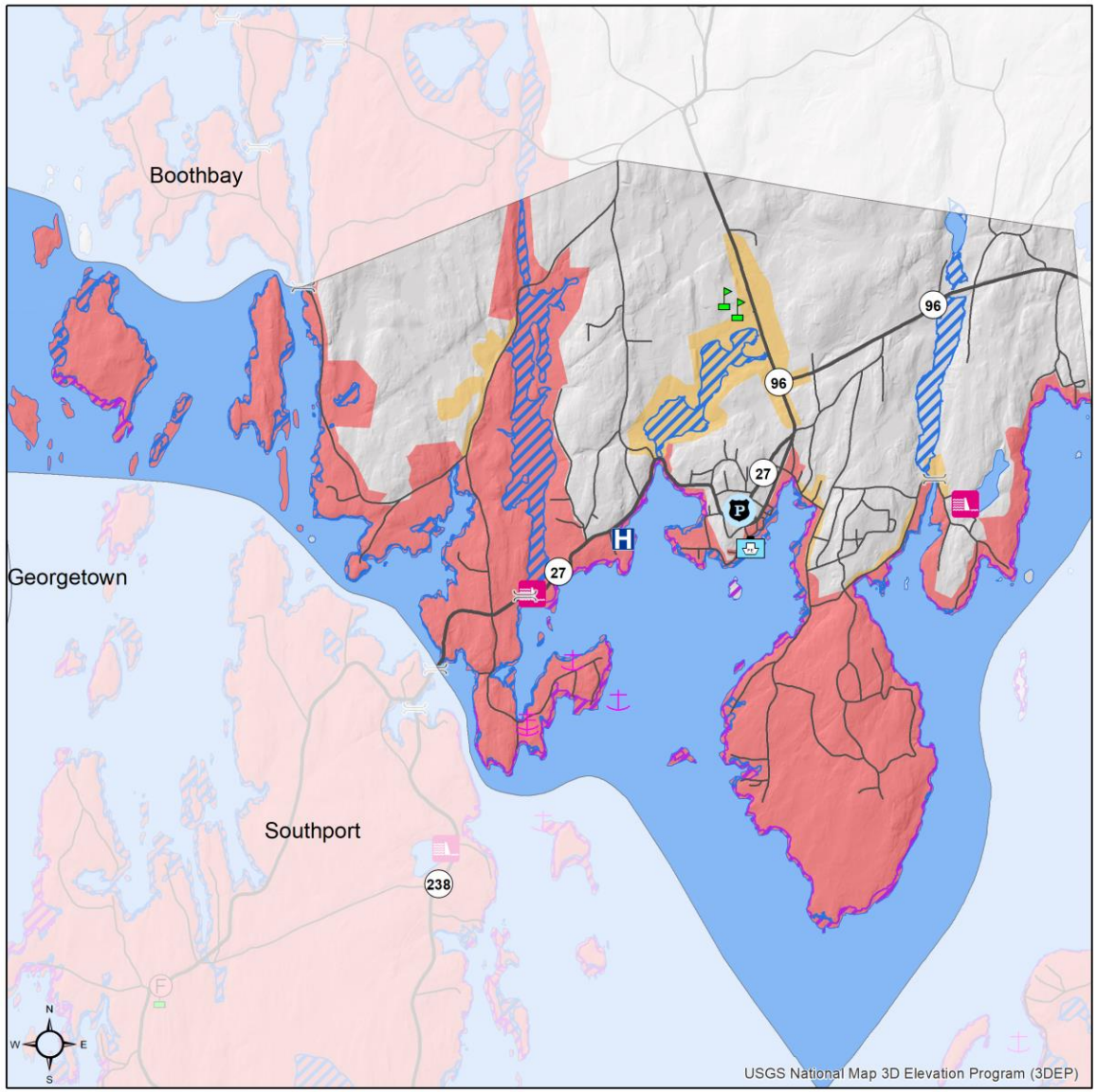
County EMA
Municipal EMA
Police Station
Fire Station
Hospital
Bridge
School
Dam
Port
Ferry Terminal
Hazardous Materials
Salt & Sand Storage
Rail
Public Road
Transmission Lines
100 Year Flood Zone
100 Year Flood Zone with Storm Waves
Hurricane Evacuation Zones: A B C

0 0.75 1.5 3 Miles

Data sources: Maine Office of GIS, U.S. Geological Survey, FEMA National Flood Insurance Program, Homeland Infrastructure Foundation Level Data, 2020 Maine Hurricane Evacuation Study

Town of Alna
Lincoln County
Hazard Mitigation Plan

Produced by Maine Emergency Management Agency



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Salt & Sand Storage
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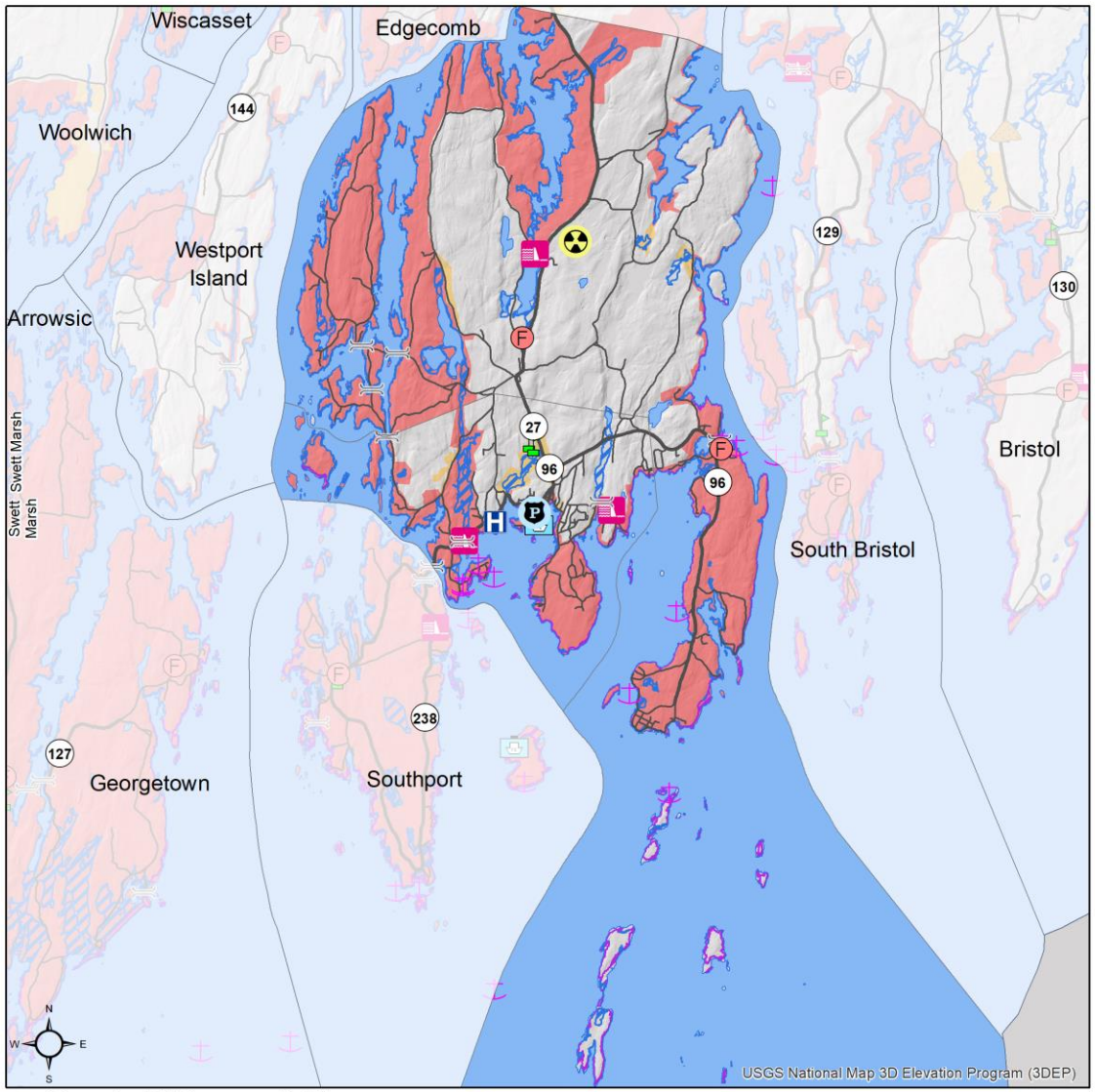
Transmission Lines
100 Year Flood Zone
100 Year Flood Zone with Storm Waves
Hurricane Evacuation Zones: A B C

0 0.5 1 2 Miles

Town of Boothbay Harbor
Lincoln County
Hazard Mitigation Plan

Produced by Maine Emergency Management Agency

Data sources: Maine Office of GIS, U.S. Geological Survey, FEMA National Flood Insurance Program, Homeland Infrastructure Foundation Level Data, 2020 Maine Hurricane Evacuation Study



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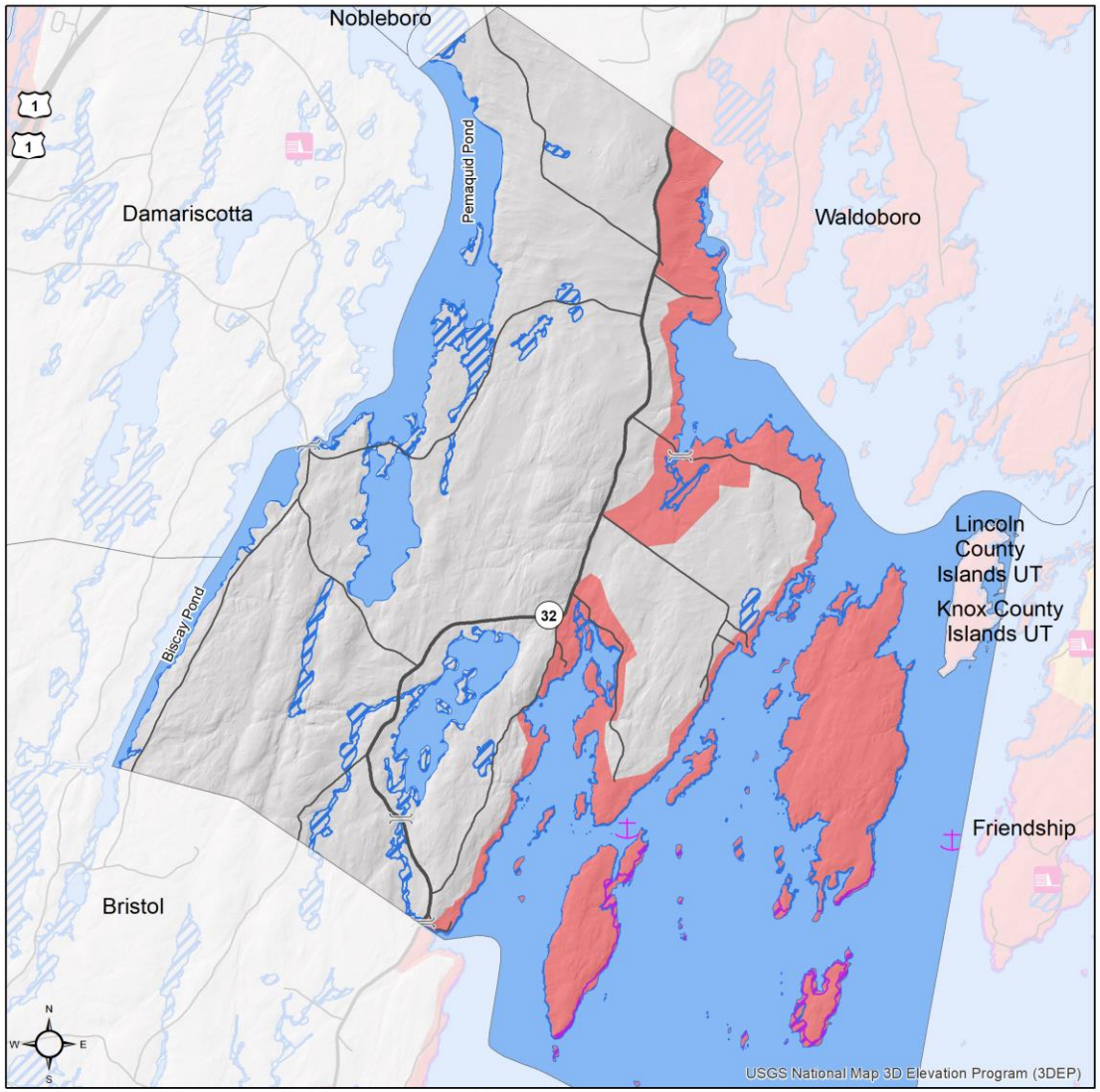
Hurricane Evacuation Zones: A B C

0 1.5 3 6 Miles

Town of Boothbay
Lincoln County
Hazard Mitigation Plan

Produced by Maine Emergency Management Agency

Data sources: Maine Office of GIS, U.S. Geological Survey, FEMA National Flood Insurance Program, Homeland Infrastructure Foundation Level Data, 2020 Maine Hurricane Evacuation Study



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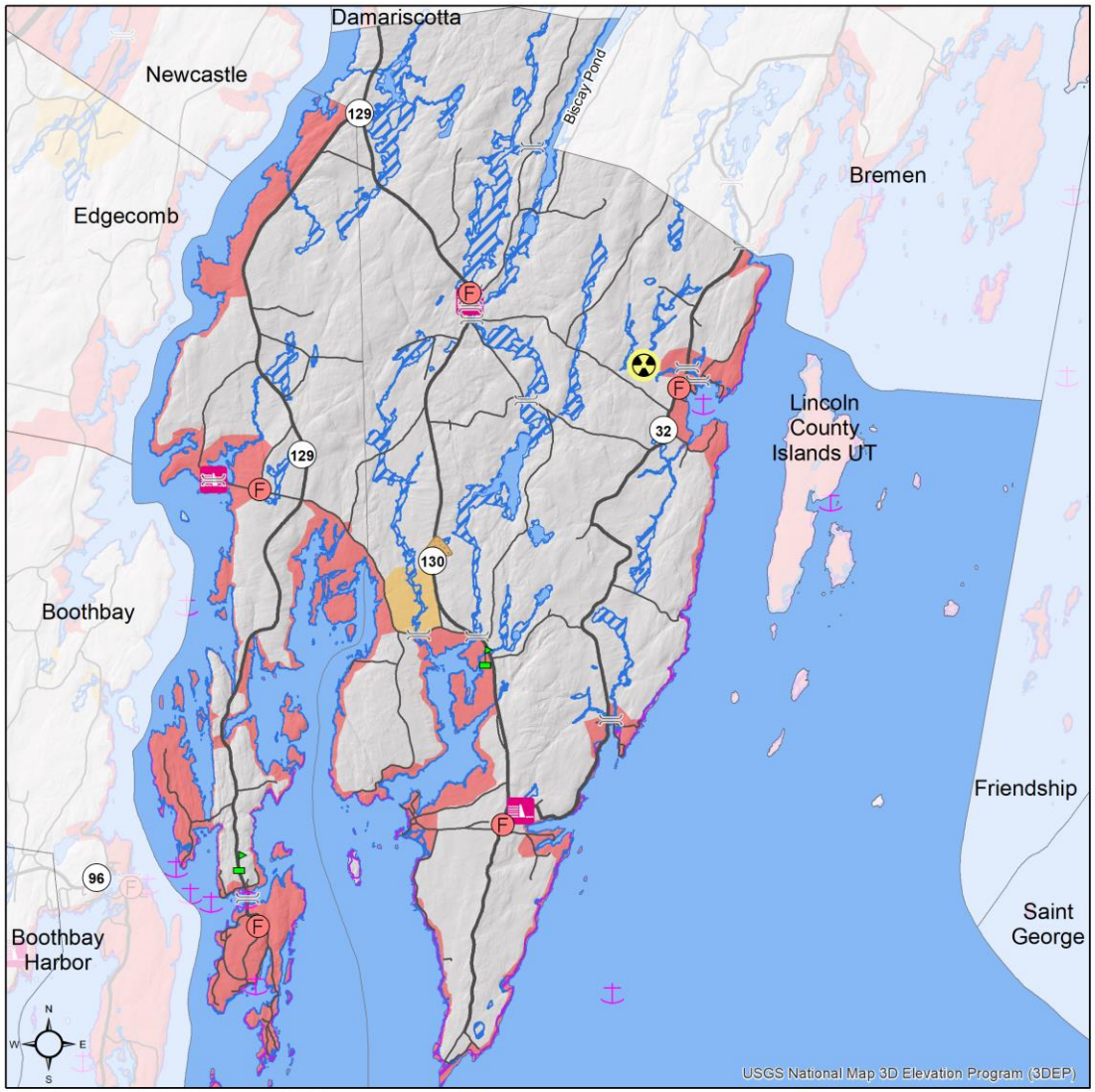
Hurricane Evacuation Zones: A B C

0 0.75 1.5 3 Miles

Data sources: Maine Office of GIS, U.S. Geological Survey, FEMA National Flood Insurance Program, Homeland Infrastructure Foundation Level Data, 2020 Maine Hurricane Evacuation Study

Town of Bremen
Lincoln County
Hazard Mitigation Plan

Produced by Maine Emergency Management Agency



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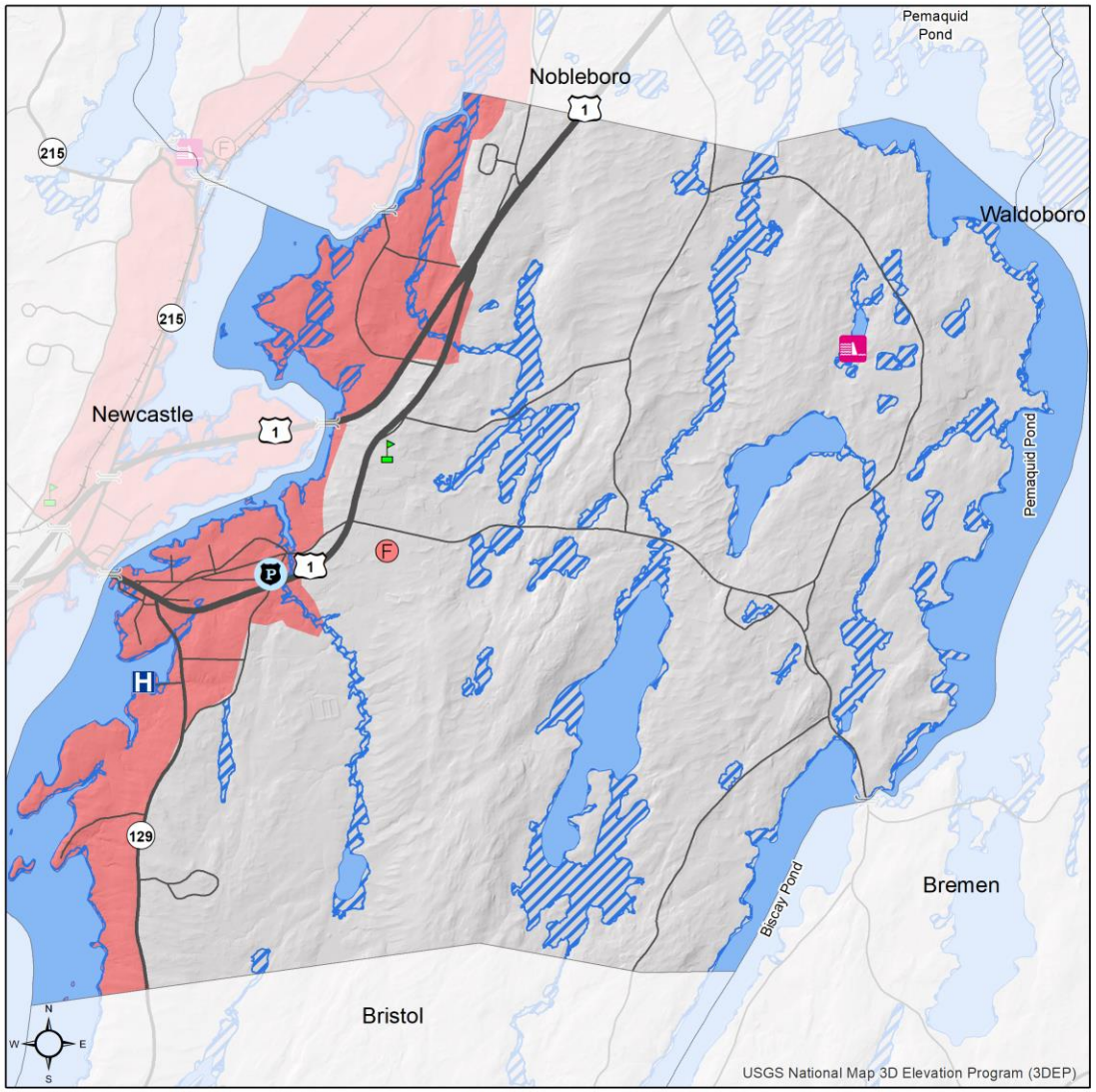
0 1.25 2.5 5 Miles

Town of Bristol
Lincoln County
Hazard Mitigation Plan

Produced by Maine Emergency Management Agency

Data sources: Maine Office of GIS, U.S. Geological Survey, FEMA National Flood Insurance Program, Homeland Infrastructure Foundation Level Data, 2020 Maine Hurricane Evacuation Study



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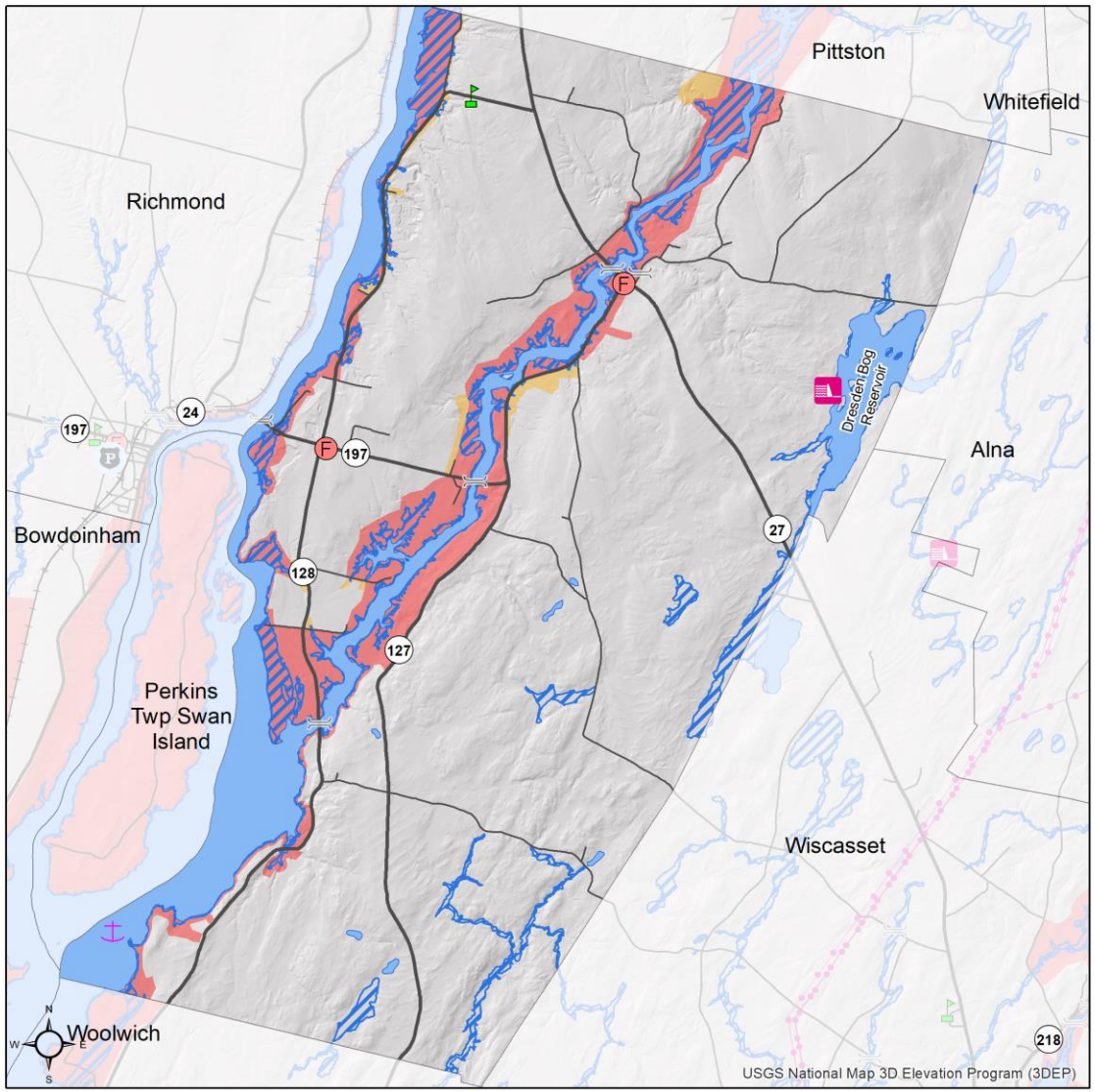
0 0.5 1 2 Miles

Data sources: Maine Office of GIS, U.S. Geological Survey, FEMA National Flood Insurance Program, Homeland Infrastructure Foundation Level Data, 2020 Maine Hurricane Evacuation Study

Town of Damariscotta
Lincoln County
Hazard Mitigation Plan

Produced by Maine Emergency Management Agency



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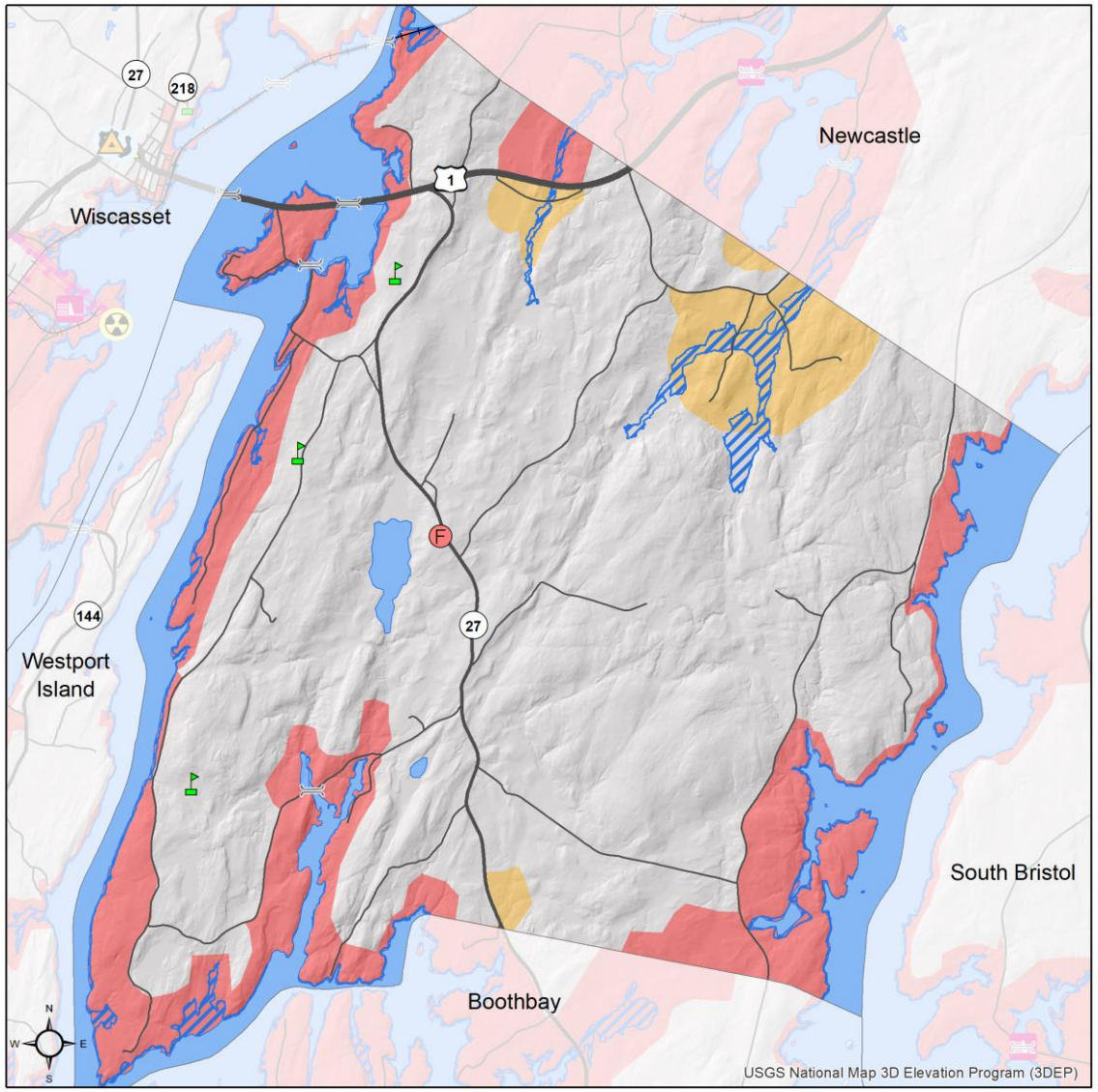
0 1 2 4 Miles

Data sources: Maine Office of GIS, U.S. Geological Survey, FEMA National Flood Insurance Program, Homeland Infrastructure Foundation Level Data, 2020 Maine Hurricane Evacuation Study

Town of Dresden
Lincoln County
Hazard Mitigation Plan

Produced by Maine Emergency Management Agency



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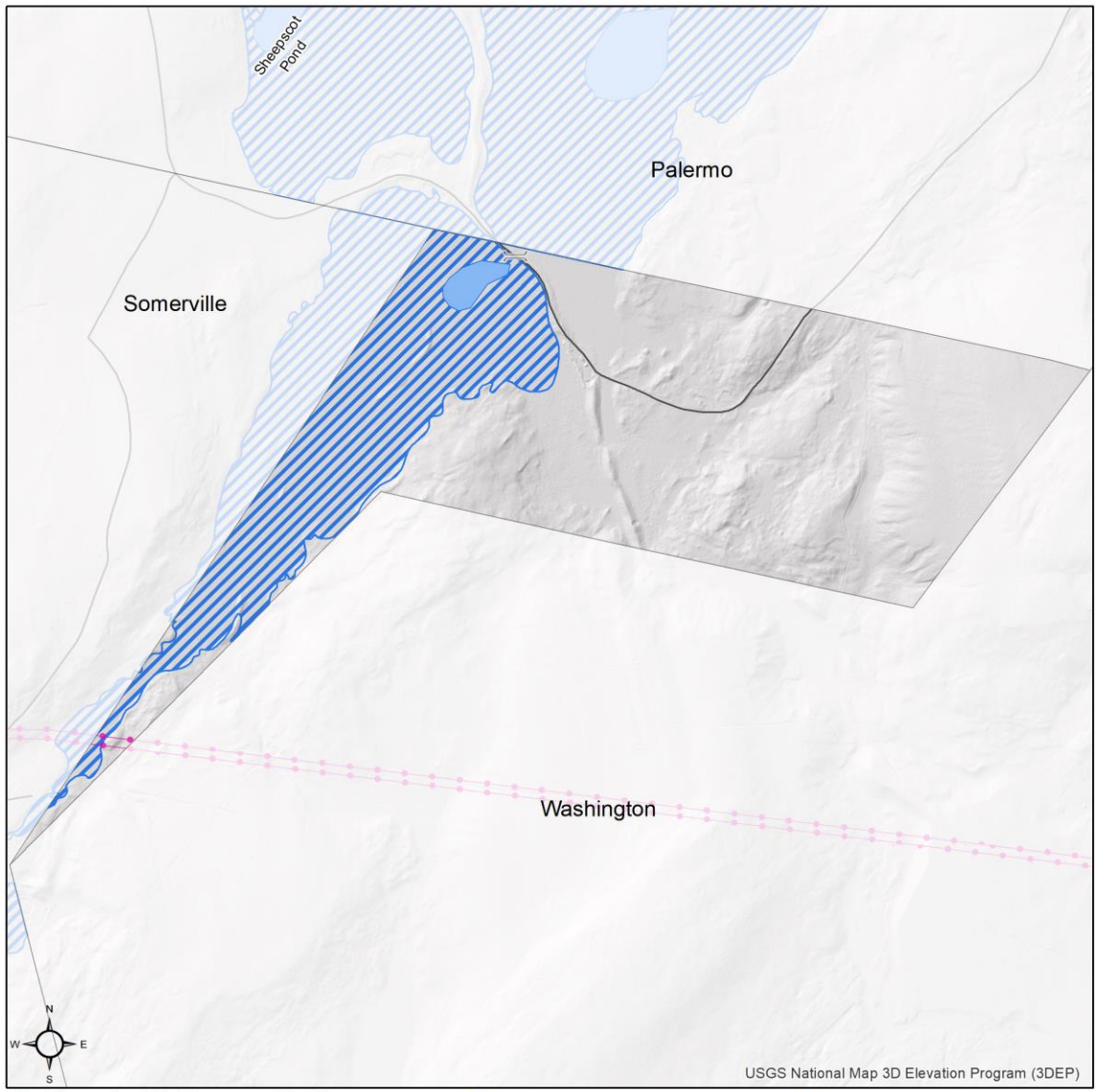
Hurricane Evacuation Zones: A B C

0 0.75 1.5 3 Miles

Town of Edgecomb
Lincoln County
Hazard Mitigation Plan

Produced by Maine Emergency Management Agency

Data sources: Maine Office of GIS, U.S. Geological Survey, FEMA National Flood Insurance Program, Homeland Infrastructure Foundation Level Data, 2020 Maine Hurricane Evacuation Study



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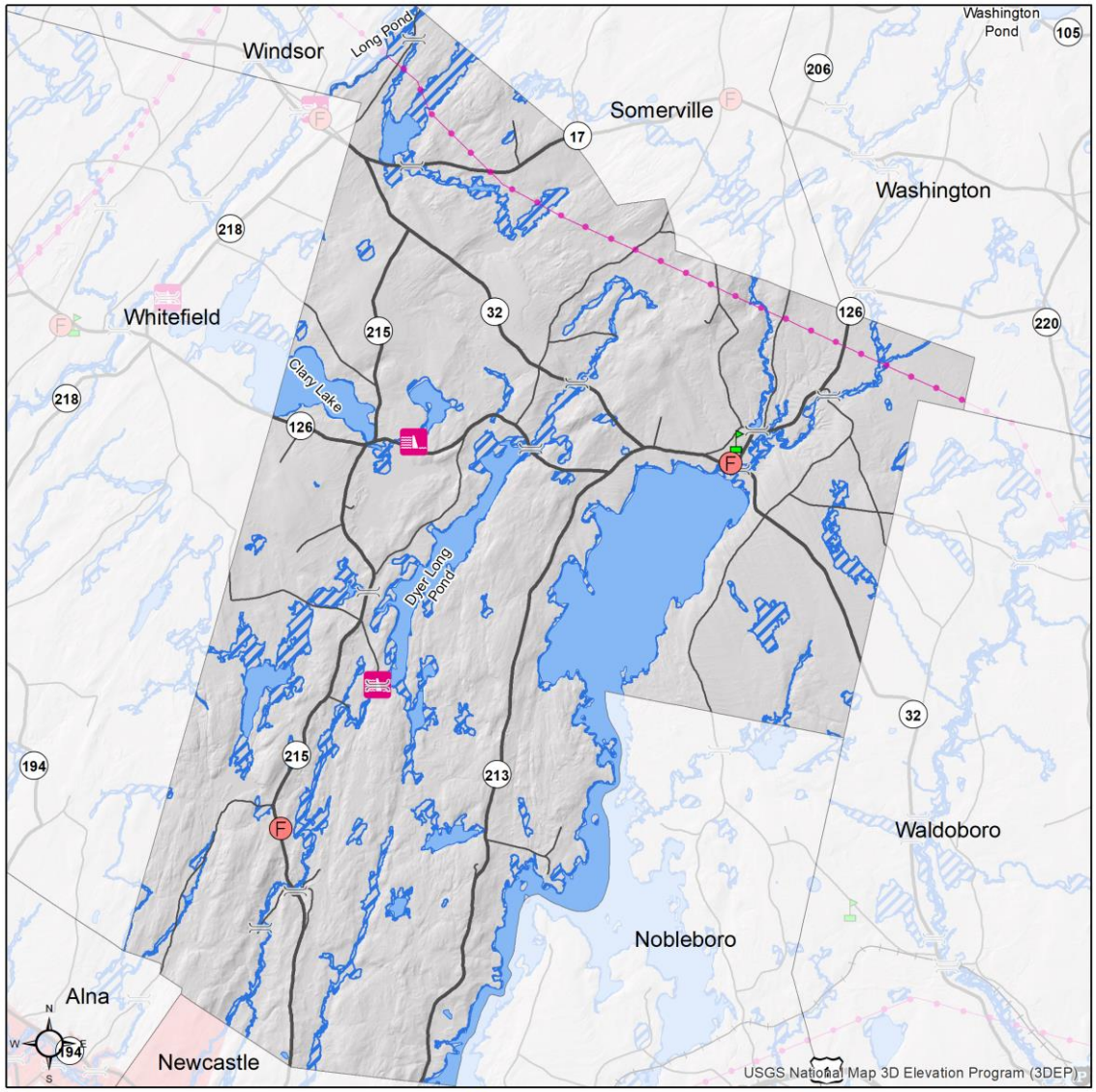
Hurricane Evacuation Zones: A B C

0 0.25 0.5 1 Miles

Hibberts Gore UT
Lincoln County
Hazard Mitigation Plan

Produced by Maine Emergency Management Agency

Data sources: Maine Office of GIS, U.S. Geological Survey, FEMA National Flood Insurance Program, Homeland Infrastructure Foundation Level Data, 2020 Maine Hurricane Evacuation Study



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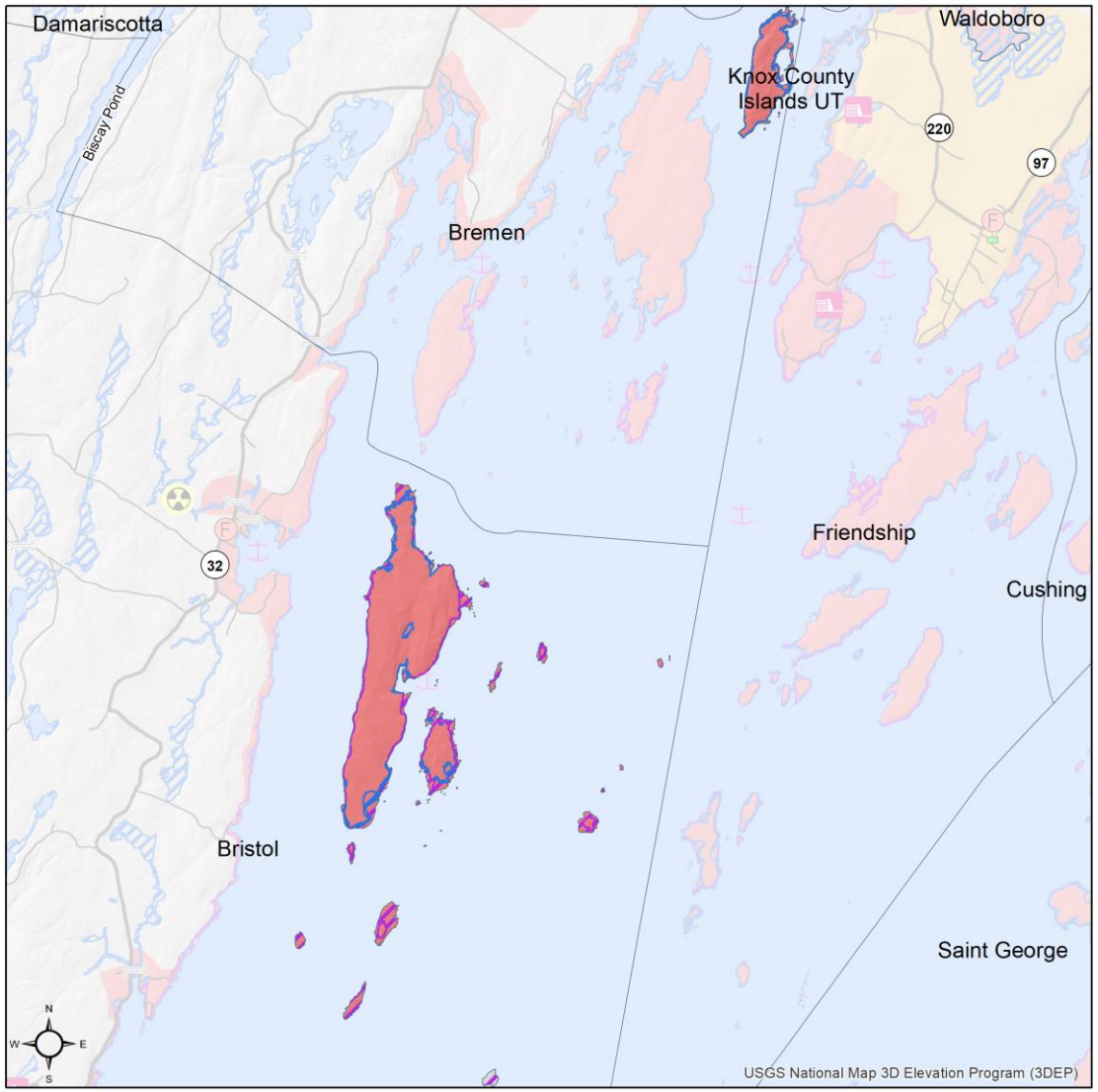
0 1.25 2.5 5 Miles

Town of Jefferson
Lincoln County
Hazard Mitigation Plan

Produced by Maine Emergency Management Agency

Data sources: Maine Office of GIS, U.S. Geological Survey, FEMA National Flood Insurance Program, Homeland Infrastructure Foundation Level Data, 2020 Maine Hurricane Evacuation Study



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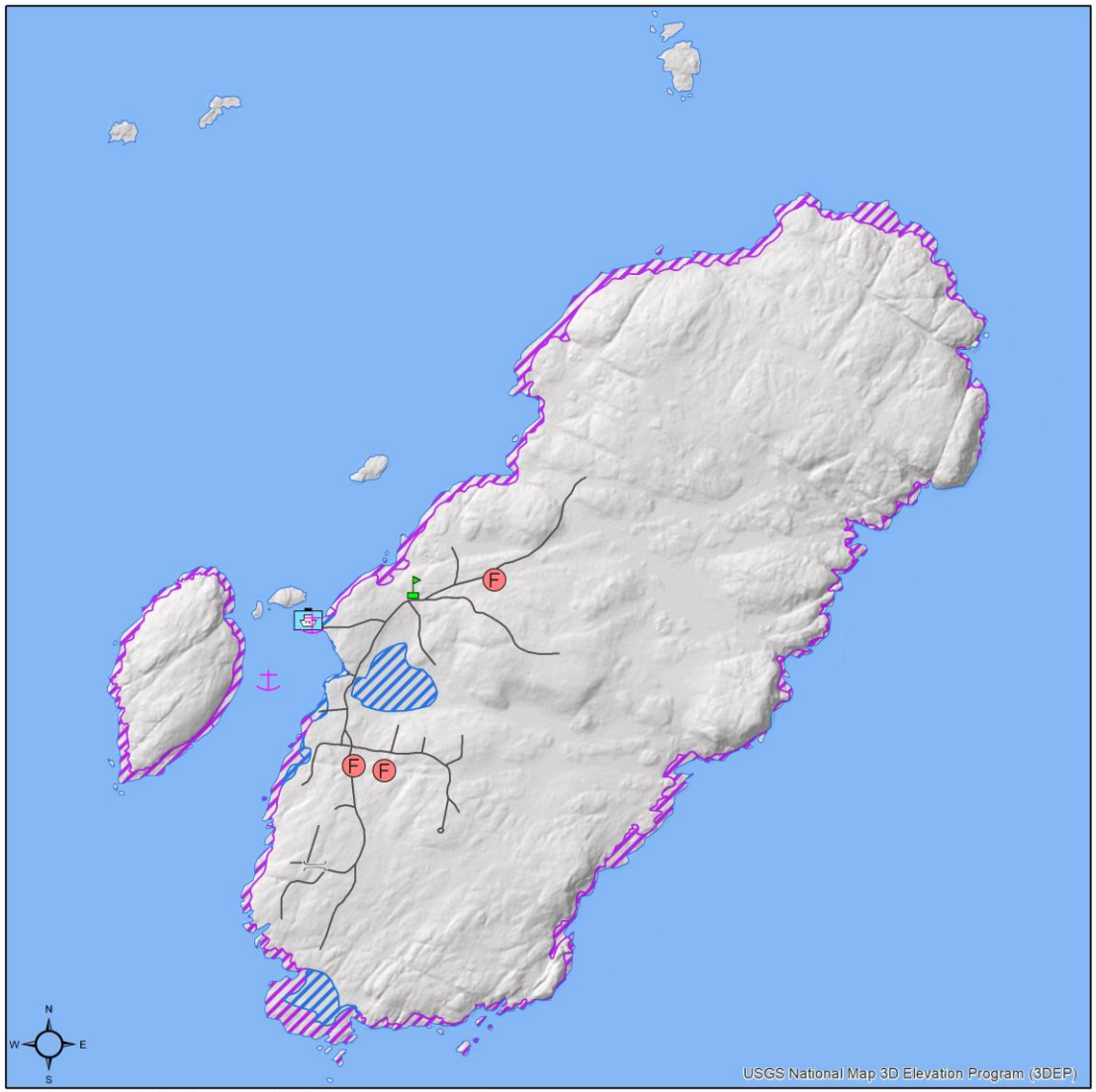
- Hurricane Evacuation Zones: A B C

0 1 2 4 Miles

Lincoln County Islands UT
Lincoln County
Hazard Mitigation Plan

Produced by Maine Emergency Management Agency

Data sources: Maine Office of GIS, U.S. Geological Survey, FEMA National Flood Insurance Program, Homeland Infrastructure Foundation Level Data, 2020 Maine Hurricane Evacuation Study



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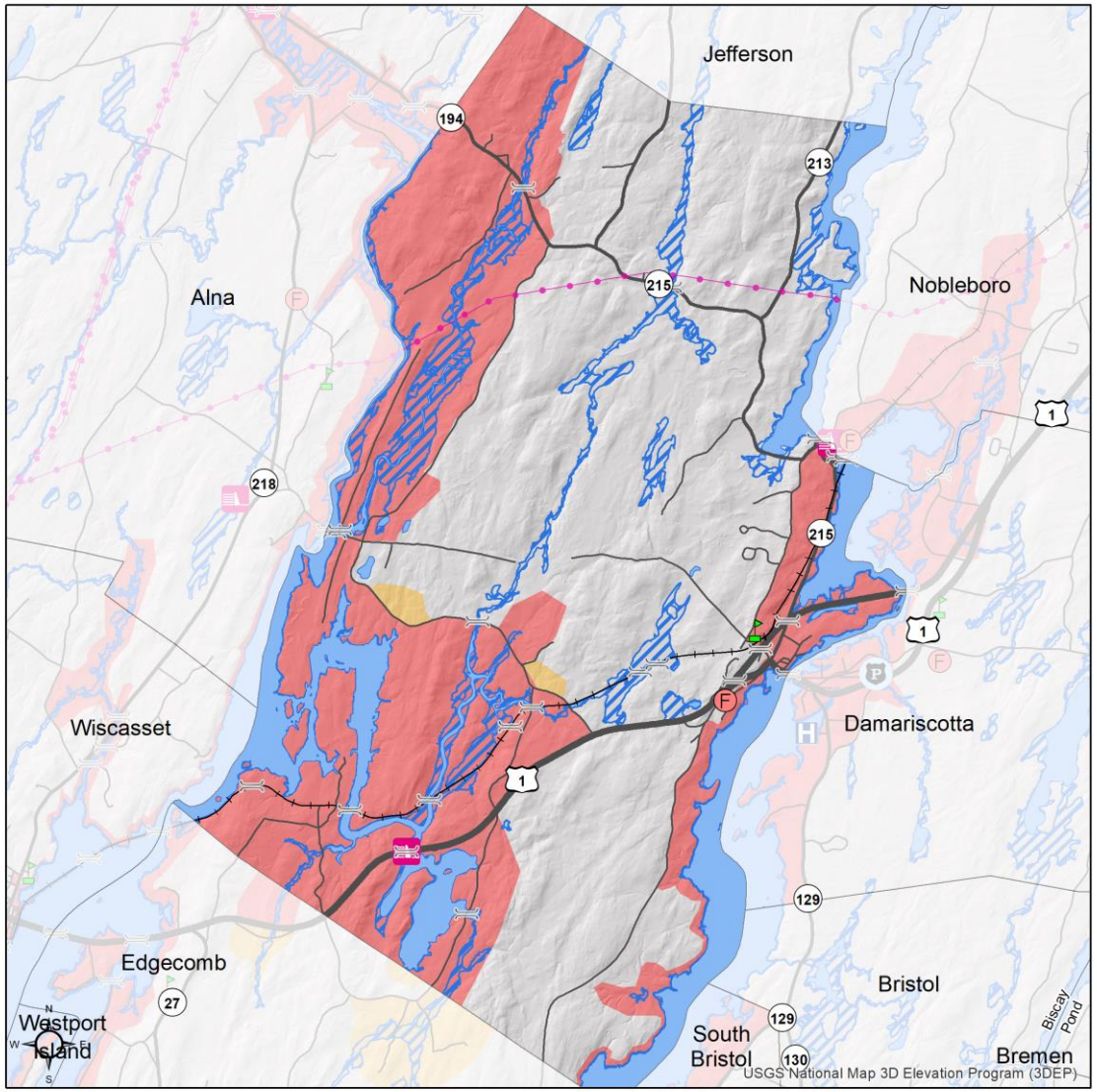
Hurricane Evacuation Zones: A B C

0 0.2 0.4 0.8 Miles

Monhegan Island Plt
Lincoln County
Hazard Mitigation Plan

Produced by Maine Emergency Management Agency

Data sources: Maine Office of GIS, U.S. Geological Survey, FEMA National Flood Insurance Program, Homeland Infrastructure Foundation Level Data, 2020 Maine Hurricane Evacuation Study



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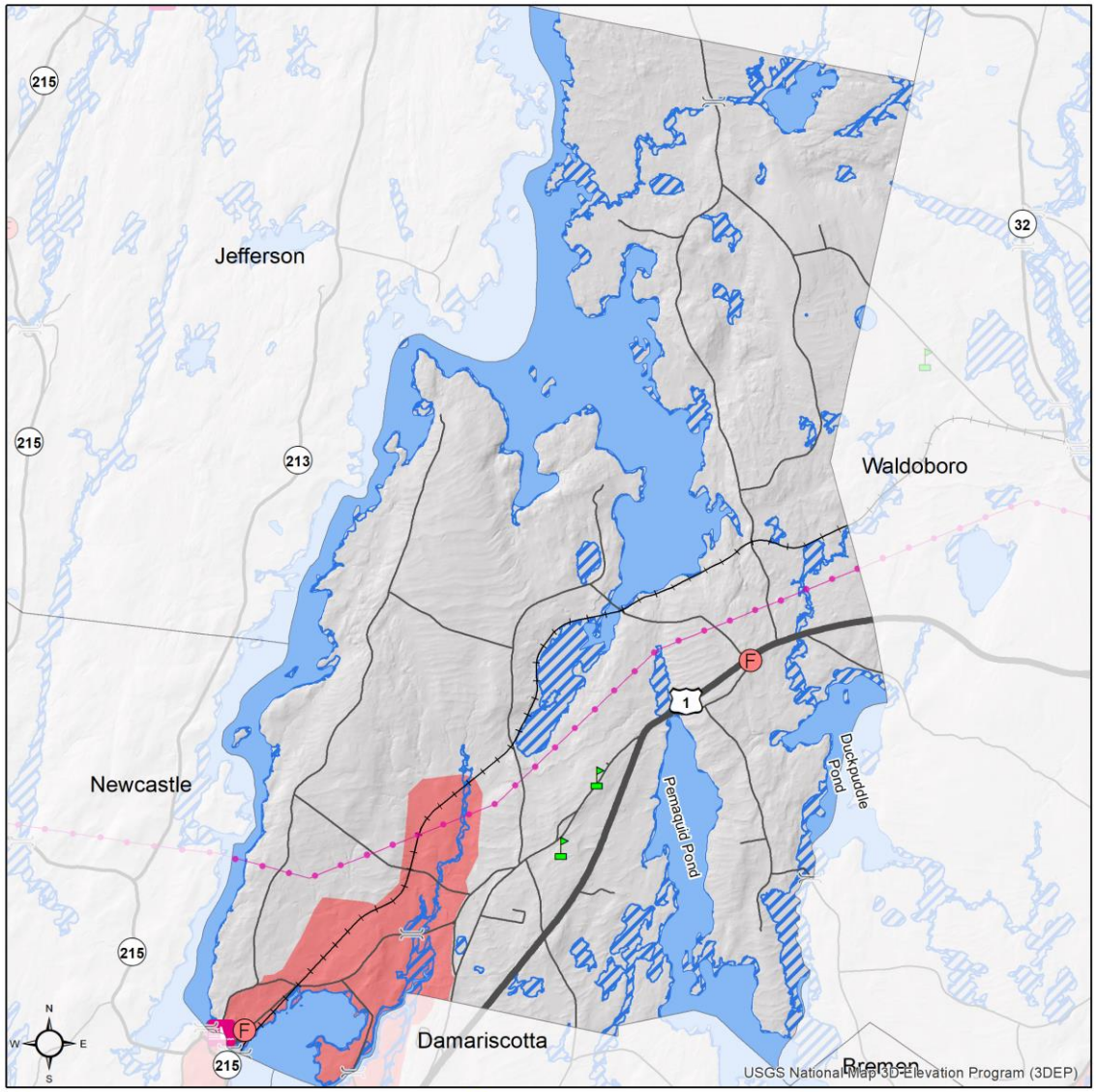
0 1 2 4 Miles

Town of Newcastle
Lincoln County
Hazard Mitigation Plan

Produced by Maine Emergency Management Agency

Data sources: Maine Office of GIS, U.S. Geological Survey, FEMA National Flood Insurance Program, Homeland Infrastructure Foundation Level Data, 2020 Maine Hurricane Evacuation Study



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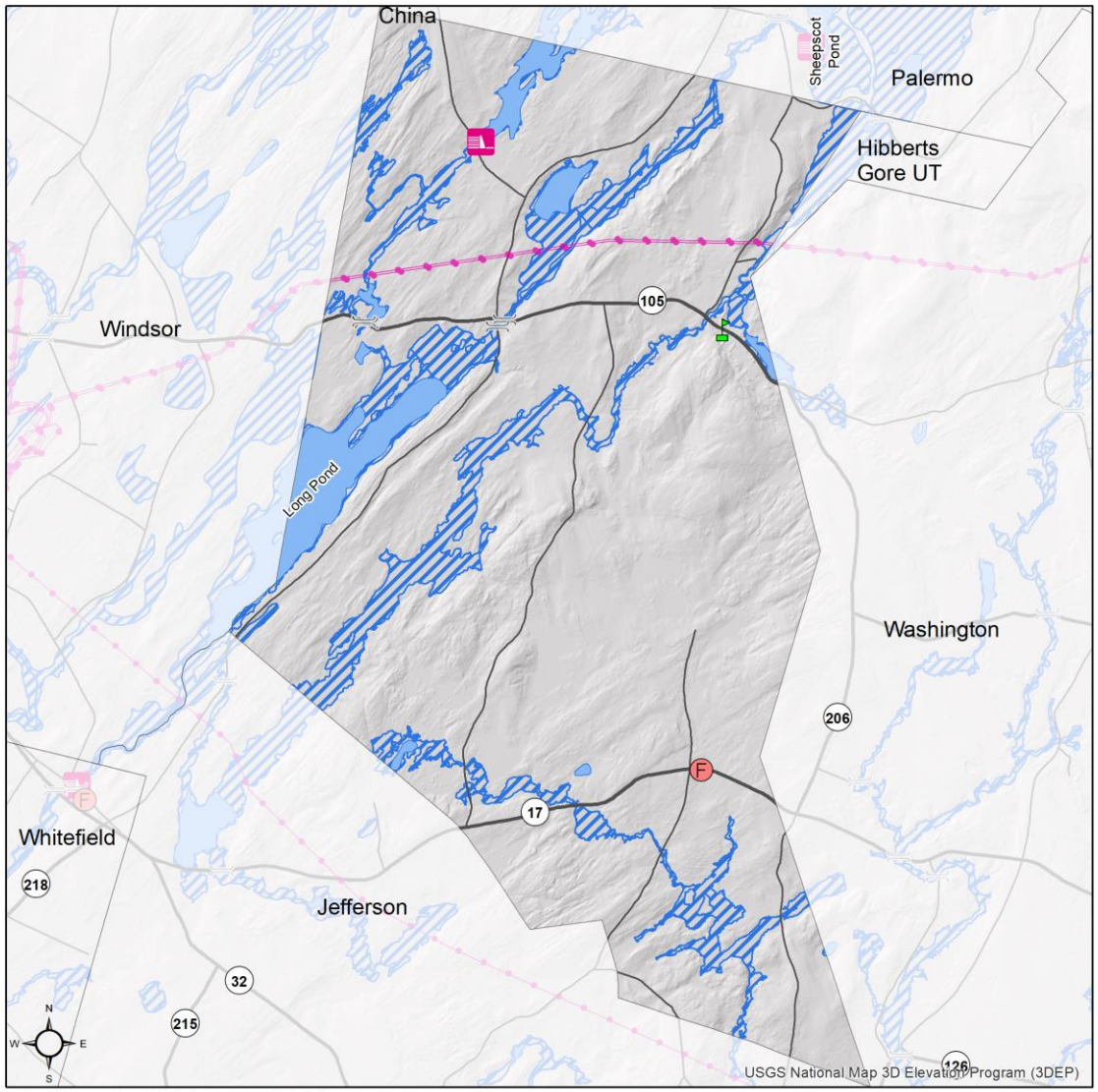
0 0.75 1.5 3 Miles

Town of Nobleboro
Lincoln County
Hazard Mitigation Plan

Produced by Maine Emergency Management Agency

Data sources: Maine Office of GIS, U.S. Geological Survey, FEMA National Flood Insurance Program, Homeland Infrastructure Foundation Level Data, 2020 Maine Hurricane Evacuation Study



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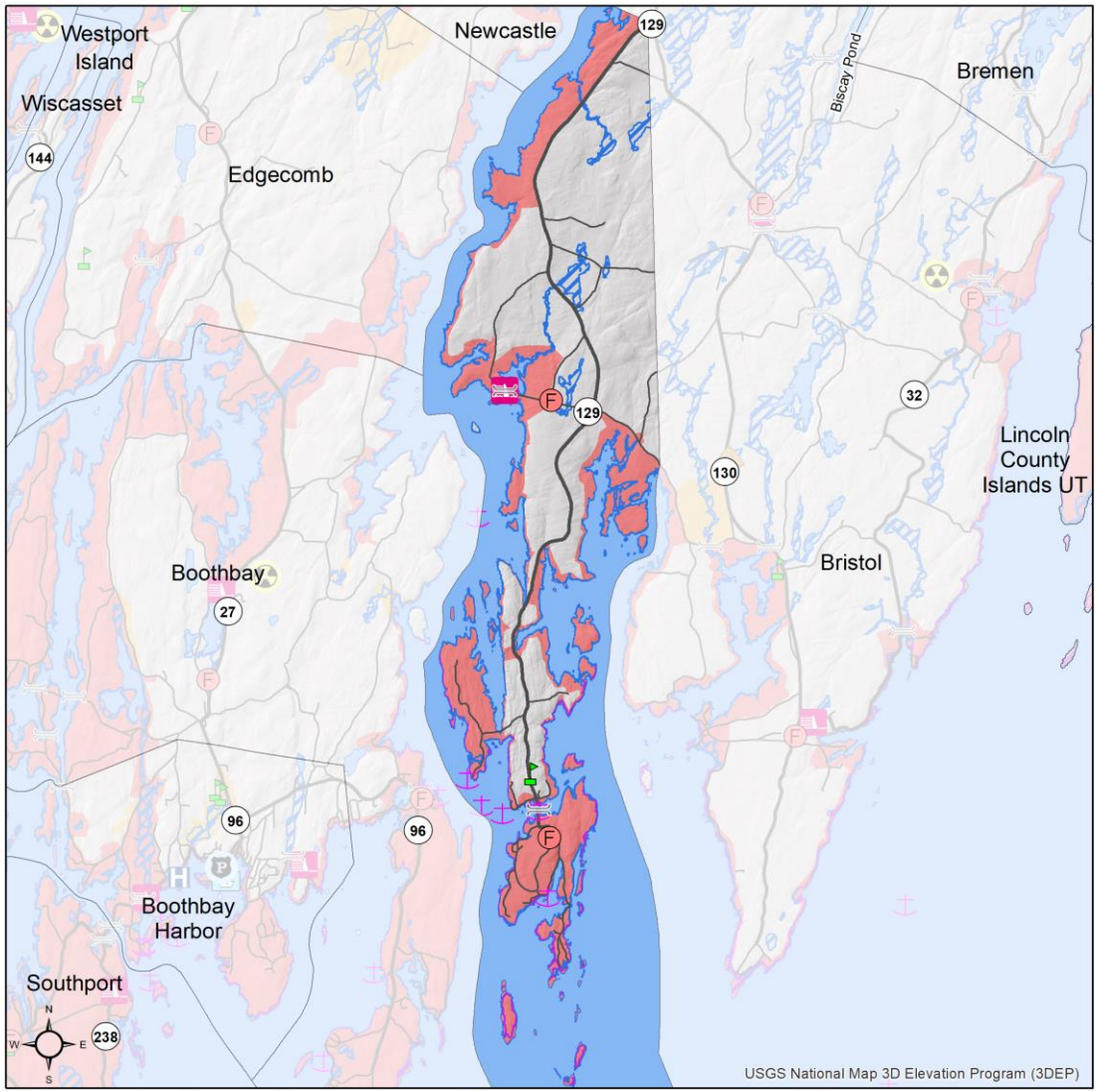
- Hurricane Evacuation Zones: A B C

0 0.75 1.5 3 Miles

Town of Somerville
Lincoln County
Hazard Mitigation Plan

Produced by Maine Emergency Management Agency

Data sources: Maine Office of GIS, U.S. Geological Survey, FEMA National Flood Insurance Program, Homeland Infrastructure Foundation Level Data, 2020 Maine Hurricane Evacuation Study



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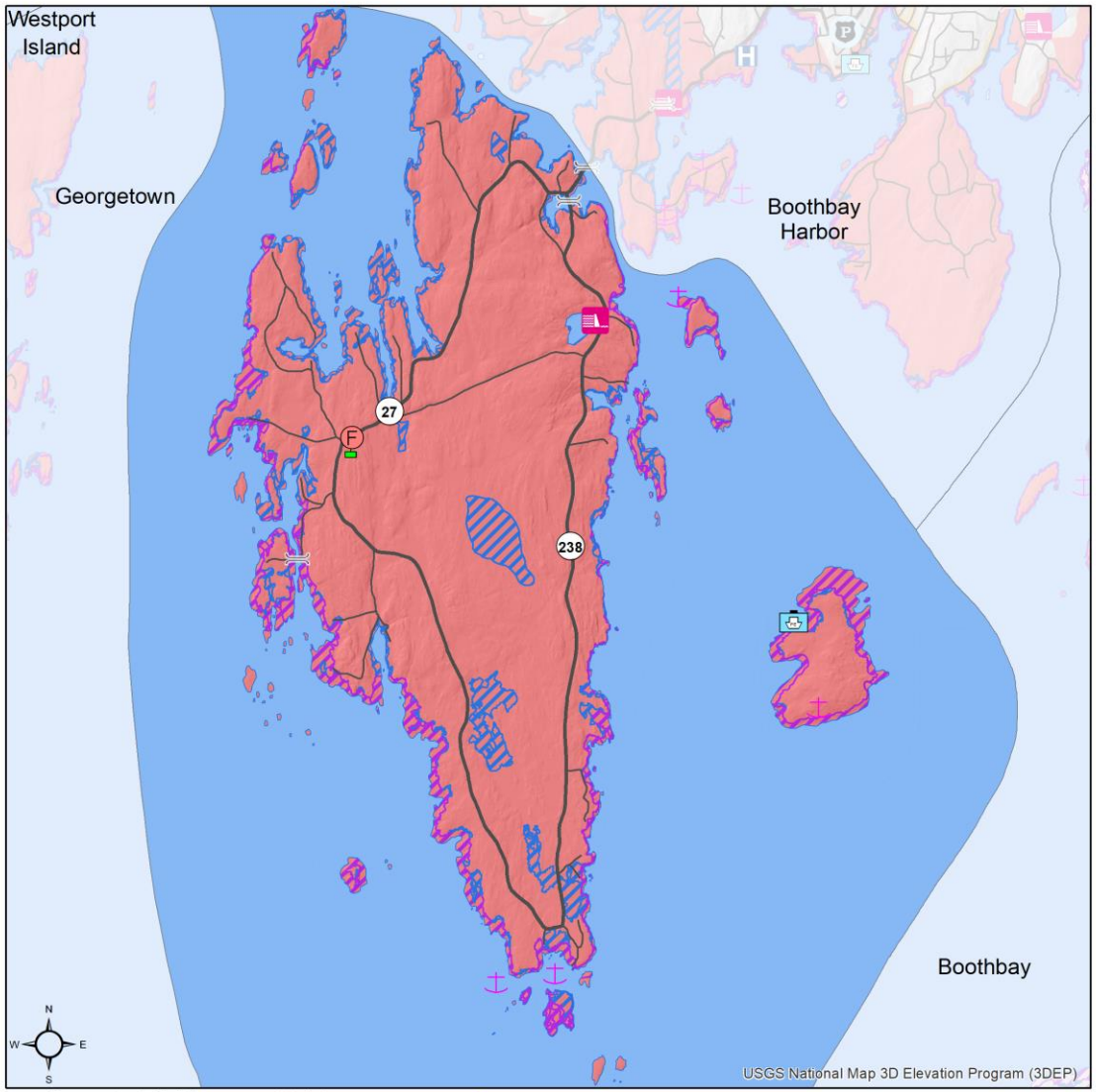
Hurricane Evacuation Zones: A B C

0 1.25 2.5 5 Miles

Town of South Bristol
Lincoln County
Hazard Mitigation Plan

Produced by Maine Emergency Management Agency

Data sources: Maine Office of GIS, U.S. Geological Survey, FEMA National Flood Insurance Program, Homeland Infrastructure Foundation Level Data, 2020 Maine Hurricane Evacuation Study



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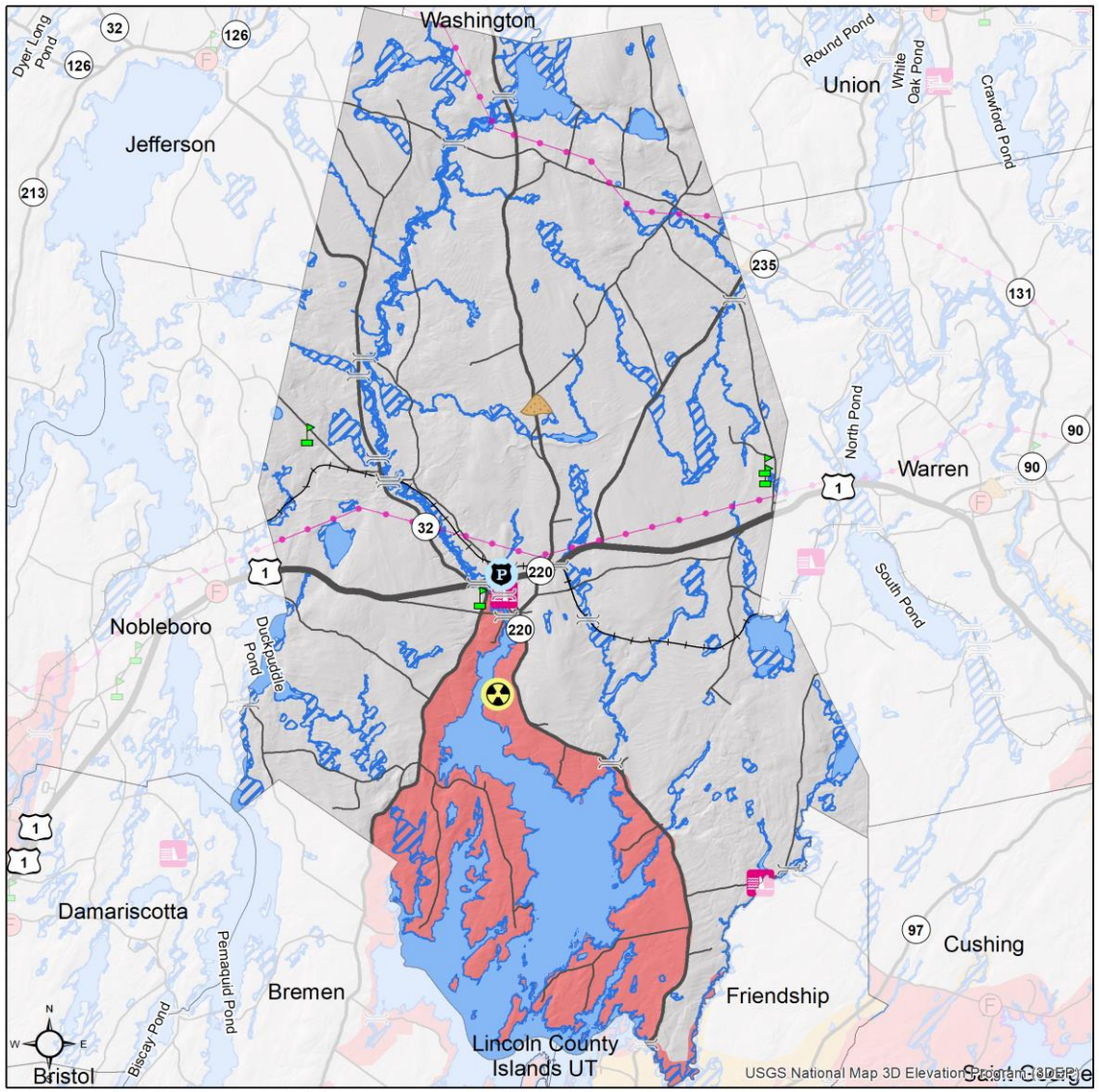
0 0.5 1 2 Miles

Town of Southport
Lincoln County
Hazard Mitigation Plan

Produced by Maine Emergency Management Agency

Data sources: Maine Office of GIS, U.S. Geological Survey, FEMA National Flood Insurance Program, Homeland Infrastructure Foundation Level Data, 2020 Maine Hurricane Evacuation Study



Town of Waldoboro
Lincoln County
Hazard Mitigation Plan

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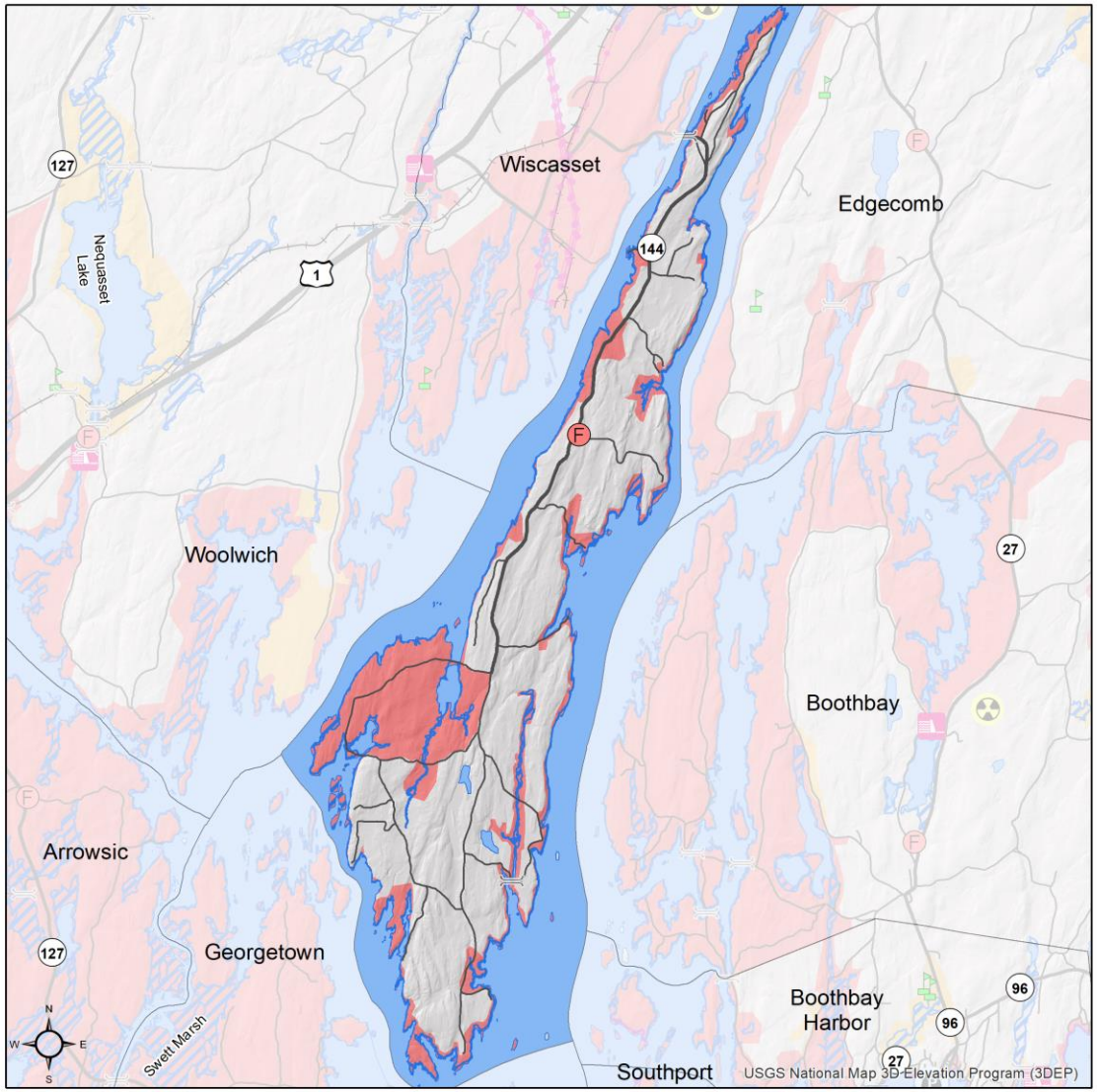

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0 1 2 4 Miles

Town of Westport Island
Lincoln County
Hazard Mitigation Plan

Produced by Maine Emergency Management Agency

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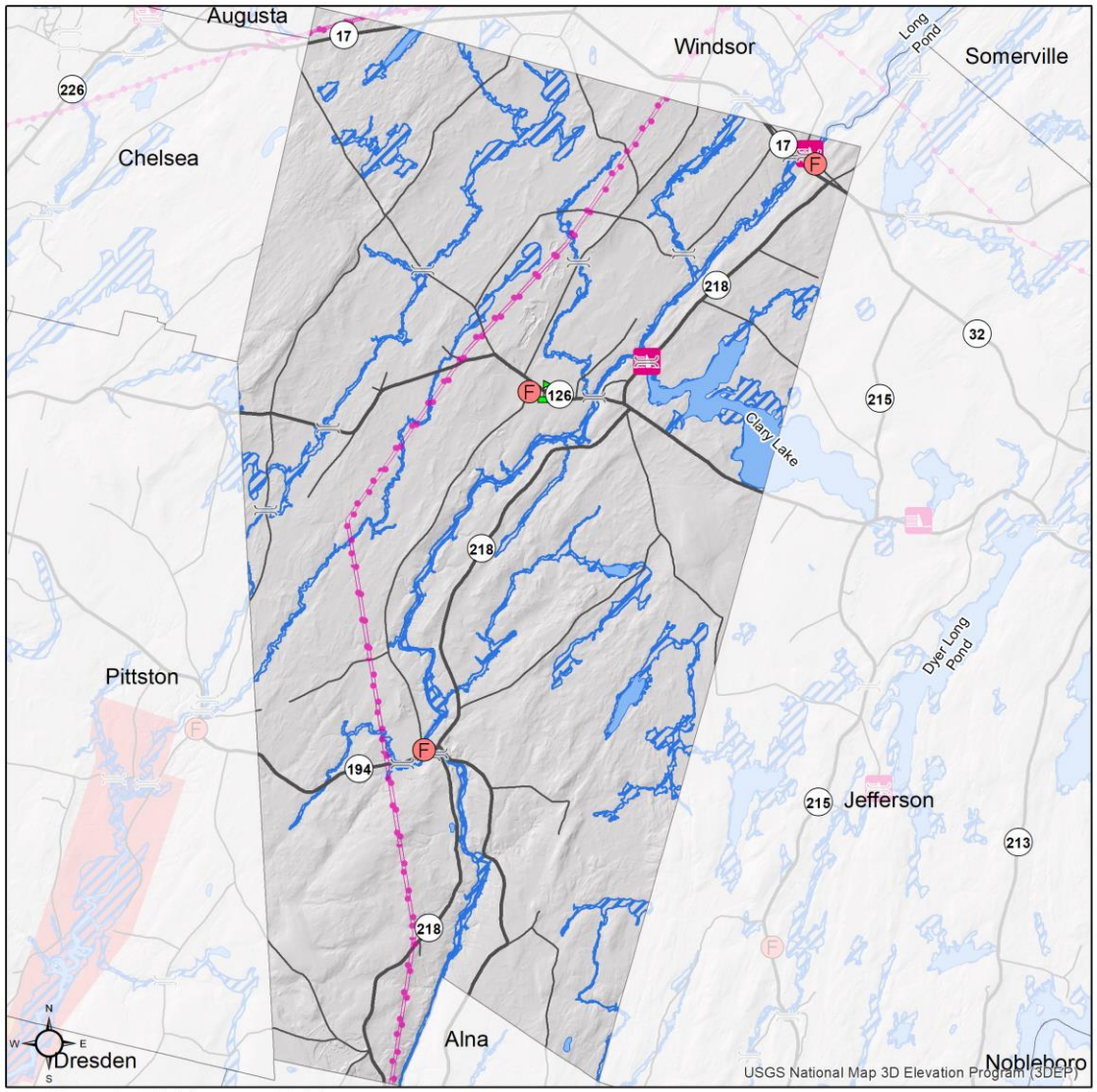

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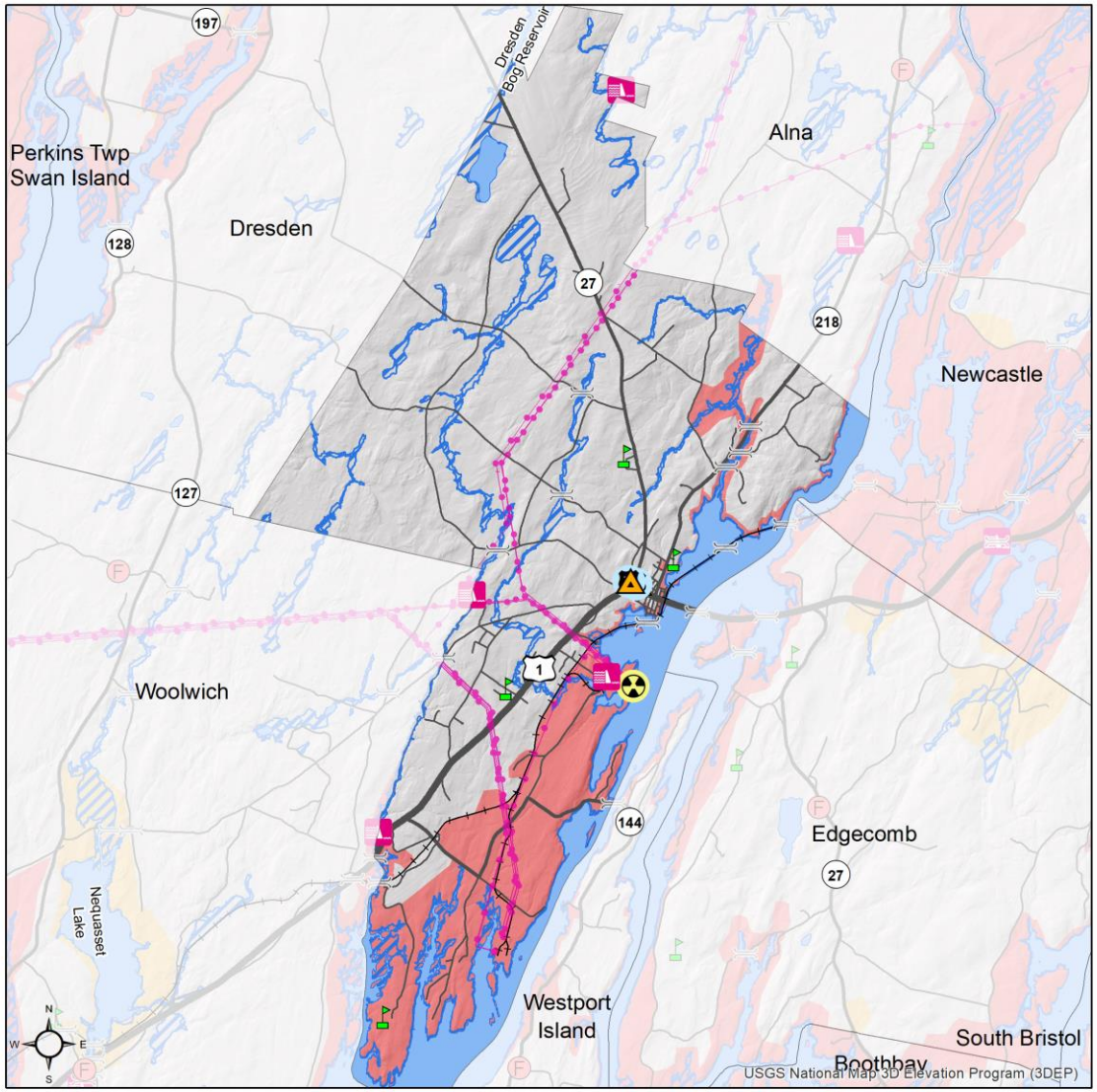
0 1.25 2.5 5 Miles

Town of Whitefield
Lincoln County
Hazard Mitigation Plan

Produced by Maine Emergency Management Agency

Data sources: Maine Office of GIS, U.S. Geological Survey, FEMA National Flood Insurance Program, Homeland Infrastructure Foundation Level Data, 2020 Maine Hurricane Evacuation Study



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0 1.25 2.5 5 Miles

Town of Wiscasset
Lincoln County
Hazard Mitigation Plan

Produced by Maine Emergency Management Agency

Data sources: Maine Office of GIS, U.S. Geological Survey, FEMA National Flood Insurance Program, Homeland Infrastructure Foundation Level Data, 2020 Maine Hurricane Evacuation Study

ELEMENT C: MITIGATION STRATEGY

- 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? (Requirement §201.6(c)(3))
- C2. Does the Plan address each jurisdiction's participation in the NFIP and continued compliance with NFIP requirements, as appropriate? (Requirement §201.6(c)(3)(ii))
- C3. Does the Plan include goals to reduce/avoid long-term vulnerabilities to the identified hazards? (Requirement §201.6(c)(3)(i))
- 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? (Requirement §201.6(c)(3)(ii))
- 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? (Requirement §201.6(c)(3)(iv)); (Requirement §201.6(c)(3)(iii))
- 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? (Requirement §201.6(c)(4)(ii))

Updates from the 2016 plan:

- The American Rescue Plan Act (ARPA) of 2021, and other federal government relief funding in response to the COVID-19 pandemic includes funding for municipalities, County, and state governments for public health and safety projects. Notation of these funds for potential hazard mitigation projects in noted in Element C5
- New capabilities at the Maine Emergency Management Agency (MEMA) allow municipalities to list projects that included engineering or scoping costs as a separate line item to be able to source funding specific for that task.
- Actions from the 2016 plan are included for both the County and individual municipalities and updates on those projects are provided. New projects for the County and municipalities for 2021 and beyond are included where applicable.

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?

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. Each participating jurisdiction holds authorities to support mitigation actions including the ability to tax, establish ordinances, exercise eminent domain, and develop public facilities and infrastructure.

- **Town Manager, Administrator, Administrative Assistant to the Selectmen:** Some towns in Lincoln 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 manager to hire staff.
- **Staff Resources**: Staff resources, where available, usually consist of a planner or community development director. There are no towns in Lincoln 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 on the board of selectmen.
- **Flood Hazard Ordinance:** In the following table, the designation "LUPC" indicates that Unorganized Territories and Plantation flood plains are under the regulatory jurisdiction of the State's Land Use Planning Commission (LUPC).
- **All of the towns in Lincoln 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 Unorganized Territories and Plantation 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; and the designation LUPC indicates that the plantation is governed by the State's Land Use Planning Commission. All Lincoln County towns have a Selectboard (or Assessors, as is the case in Monhegan Island Plantation) who are the final authority on fiscal matters and decision-making. Where an authority is not explicitly stated, it can be assumed the Selectboard or Assessors are the authority.
- **Resources**: Other municipal officials and departments involved in hard mitigation activities. In addition to staffing or other expertise, funding resources are from local taxes**,** grants, and/or private donations.

Table C1: Authorities, Policies, Programs and Resources Available to Accomplish Hazard Mitigation

Ability to expand on and improve existing policies and programs:

Town	Town Manager or Admin	Staff Involved in Local Planning	Public Works or Road Commissioner	EMA Director	Flood Hazard Ordinance	Shoreland Zoning Ordinance	Form of Government	Other authorities for Hazard Mitigation
Alna	Clerk	N	RC	Y	Y	Y	ST	Alna Fire Department, EMA
Boothbay	TM	Y	Y	Y	Y	Y	ST/TM	
Boothbay Harbor	TM	N	Y	Y	Y	Y	ST/TM	
Bremen	A	Y	RC	N	Y	Y	ST	
Bristol	A	N	RC	Y	y	Y	ST	
Damariscotta	TM	Y	Y	Y	Y	Y	ST/TM	GSB Sanitary District; CLC Ambulance Service
Dresden	A	N	Y	Y	Y	Y	ST	
Edgecomb	Clerk	N	Y	Y	Y	Y	ST	
Jefferson	AA	N	Y	Y	Y	Y	ST	
Monhegan Island Plt.	A	Y	RC	Y	LUPC	LUPC	Assessors and LUPC	
Newcastle	TM	Y	Y	Y	Y	Y	ST/TM	
Nobleboro	Clerk	N	Y	Y	Y	Y	ST	
Somerville	AA	N	Y	Y	Y	Y	ST	Somerville Volunteer FD
South Bristol	N	N	N	Y	Y	Y	ST	
Southport	AA	N	Y	Y	Y	Y	ST	
Waldoboro	TM	Y	Y	Y	Y	Y	ST/TM	
Westport Island	N/a	N	RC	Y	Y	Y	ST	Planning Board; Volunteer FD; CEO
Whitefield	AA	N	Y	Y	Y	Y	ST	
Wiscasset	TM	N	Y	Y	Y	Y	ST/TM	

The LCRPC, established under Maine statutes (MRSA Title 13, Chapter 81, and Title 30-A, Chapter 119, Section 2321) and funded through a combination of county funds and grants received from state agencies, engages in local planning activities that promote sustainable

land use, transportation, and housing development for communities in Lincoln County[34]. Planning services directed at sustainable development align well with LCHMP goals to reduce long-term risks associated with natural hazards. LCRPC therefore would be a crucial partner for addressing future improvement and implementation of local mitigation policies and programs well beyond their assistance with this LCHMP update.

All jurisdictions in Lincoln County could expand and improve their existing capabilities if additional funds, beyond their existing tax bases, became available to address hazard mitigation actions listed under Elements C4 and C5.

The Maine Uniform Building and Energy Code (MUBEC) mandates the adoption of the 2015 International Building Code (IBC) and International Residential Code (IRC) for all jurisdictions with populations equal to or exceeding 4,000 (currently determined by the 2010 U.S. Census)[35,36]. However, jurisdictions hold the right to adopt more recent building codes as a means of improving existing policy toward hazard mitigation. For floodplain programs, communities could potentially use more accurate topographic maps to expand upon FIRMs used by municipalities as the basis for floodplain ordinances, so long as the newly delineated floodplain is larger than the original map.

C2. Does the Plan address each jurisdiction's participation in the NFIP and continued compliance with NFIP requirements, as appropriate?

NFIP compliance:

In 2021, all 18 towns within Lincoln County participate in the National Flood Insurance Program (NFIP). As a condition of participation in NFIP, each town has enacted a floodplain management ordinance that limits new development in floodplain areas identified by Flood Insurance Rate Maps (FIRMs) produced by FEMA.

Monhegan Island Plantation and the unorganized territories in Lincoln County are under the jurisdiction of Maine's Land Use Planning Commission (LUPC). LUPC has agreed to administer and enforce the NFIP for all communities that are under its control and has modified its requirement to include floodplain management regulations. These jurisdictions therefore participate in the NFIP by virtue of the fact that they are under the jurisdiction of the LUPC.

Participating communities will continue to comply with NFIP through the following activities:

- Enforcement of approved floodplain ordinances in Special Flood Hazard Areas
- Training and technical assistance for local code officials provided by the Maine Floodplain Management Program
- Distribute informational resources on NFIP insurance and building codes

[34] Lincoln County Regional Planning Commission: https://www.lcrpc.org/about
[35] Office of the State Fire Marshal Maine Uniform Building and Energy Code: https://www.maine.gov/dps/fmo/building-codes
[36] National Building Code Adoption Tracking Portal: https://www.arcgis.com/apps/MapSeries/index.html?appid=a053ac48343c4217ab4184bc8759c350

- Community assistance EMA activities to keep local officials informed of flood-related hazard mitigation issues and share instructions on how to read and interpret FIRMs

Lincoln County Communities Participating in the NFIP

Town	Init FHBM[1]	Init FIRM[1]	Curr Eff Map Date[1]	Reg-Emer Date[1]	Floodplain Management Ordinance [2]	Participation in NFIP
Alna	01/03/75	03/01/05	07/16/15	03/01/05	X	X
Boothbay	02/07/75	06/03/86	07/16/15	06/03/86	X	X
Boothbay Harbor	02/14/75	06/03/86	07/16/15	06/03/86	X	X
Bremen	01/31/75	02/04/87	07/16/15	02/04/87	X	X
Bristol	02/21/75	06/19/89	07/16/15	06/19/89	X	X
Damariscotta	02/14/75	09/30/88	07/16/15	09/30/88	X	X
Dresden	09/20/74	05/19/87	07/16/15	05/19/87	X	X
Edgecomb	01/03/75	10/01/02	07/16/15	10/01/02	X	X
Hibbert's Gore (UT)	n/a	07/16/15	07/16/15(M)	04/30/84	LUPC	LUPC
Jefferson	10/25/74	10/18/88	07/16/15	10/18/88	X	X
Lounds Island and Lincoln County Islands (UT)	n/a	01/04/2002	07/16/2015	04/30/84	LUPC	LUPC
Monhegan Island Plt.	-	7/16/15	07/16/15	4/30/84	LUPC	LUPC
Newcastle	02/21/75	04/01/03	07/16/15	04/01/03	X	X
Nobleboro	02/14/75	11/15/89	07/16/15	11/15/89	X	X
Somerville	04/25/75	04/03/87	07/16/15	04/03/87	X	X
South Bristol	04/11/75	07/16/90	07/16/15	07/16/90	X	X
Southport	01/17/75	05/17/88	07/16/15	05/17/88	X	X
Waldoboro	11/01/74	04/03/85	07/16/15	04/03/85	X	X
Westport Island	01/03/75	09/01/13	07/16/15	09/01/13	X	X
Whitefield	07/26/74	07/16/15	07/16/15 (M)	02/22/2017	X	X
Wiscasset	05/24/77	04/16/91	07/16/15	11/20/91	X	X

Source: FEMA Community Status Book Report as of February, 2021.

[2]Based on responses to the Municipal Feedback form.

C3. Does the Plan include goals to reduce/avoid long-term vulnerabilities to the identified hazards?

The Hazard Mitigation Planning Team reviewed the goals contained in the 2016 Hazard Mitigation Plan and determined that these goals should continue to guide this 2021 Hazard Mitigation Plan update, and include the addition of 'Drought" and "Pandemic" as described below. Comments from participating jurisdictions (public meetings, surveys, email, phone conversations) were also used to inform these mitigation goals. The goals relate to the hazards profiled in this plan and include the following:

- **Flooding:** Reduce potential damage, injury and loss of life in Lincoln County caused by flooding.
- **Winter and summer storms:** Reduce potential damage, injury and loss of life in Lincoln County after a severe winter storm, summer storms
- **Wildfires:** Reduce potential damage, injury and loss of life in Lincoln County caused by wildfires.
- **Drought**: Reduce potential damage, injury and loss of life in Lincoln County caused by drought.
- **Pandemic**: Reduce potential damage, injury and loss of life in Lincoln County caused by a pandemic.*

*Reaching the goals of the 'Pandemic' hazard is outlined in Lincoln County's 'Disease and Epidemics' chapter of the 'Lincoln County Emergency Operations Plan,' Appendix D.

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?

The Hazard Mitigation Planning Team conducted extensive outreach to jurisdictions within the county to solicit input on specific actions and projects that will mitigate the effects of natural disasters within the County. Actions are listed in order of priority.

First listed are actions being prioritized for Lincoln County, as well as updates from actions included in the 2016 plan. Individual municipality mitigation actions can be found in Element C5. Responses from the Municipal Feedback Forms from municipalities on county-wide actions can be found in Element B – Risk Assessment in section B2. This information was used to inform the actions below.

Below are the list of county-wide mitigation actions.

Flooding: In Lincoln County, the most likely damages caused by coastal and river flooding are the destruction of roadways caused by washouts and undercutting. It does not appear that there are any critical facilities in the 100 year flood zone. However, there are several facilities that are located in the Hurricane Surge Inundation Areas. Most communities are using the FIRM information to control development in flood zones.

There has been no use of the Hurricane Inundation Surge Areas to control development. There could be loss of life caused from drowning during storm surge conditions. Flood waters may also contaminate public and private water supplies and damage personal and real property.

Updates from 2016 Plan	**Action (Language from 2016 LCMHP)**	**2016 Project Status**	**2021 Project Status Update**		
	406 Funding	New	Municipalities will be informed and updated once 404 and 406 information is received[37]. Currently working to strengthen community capabilities by submitting competitive applications for 404 and 406 funding (contingent on disaster declaration)		
	NFIP Participation	Westport Island Joined in 2011; Whitefield voted to join in 2016	No Change		
	Problem Documentation	Already discussed at one meeting to update plan; will be repeated annually	Will add to agenda for quarterly EMA meetings		
	Grant and Training Opportunities	New – as available	Ongoing to encourage community mitigation actions		
New for 2021 Plan	**Action**	**Cost**	**Timeframe**	**Responsible Agency**	**Status**
	Educational programs on flood mitigation and preparedness by using local media, social media, informational sessions and hosting a preparedness fair.	$6,000.00	2022, 2024, 2026	Lincoln County Emergency Management Agency	New Program

[37] https://www.fema.gov/press-release/20210318/fema-hazard-mitigation-grants-404-and-406

Severe Summer and Winter Storms:

Severe summer storms. In Lincoln County, the most likely damages caused by the high winds from a severe summer storm or hurricane event are the loss of electrical power, from downed power transmission lines, and the blockage of roadways, from tree debris. There could be loss of life caused by debris falling on an individual, or from storm-related vehicle accidents. Other types of general damage to personal and real property may be caused by severe storm or hurricane winds.

Severe winter storms. The most likely damages caused by a severe winter storm event are the loss of electrical power, from downed power transmission lines, and the blockage of roadways, from tree debris or winter snow or ice. There could be loss of life caused by delayed responses from emergency services, the improper use of backup heat sources, freezing conditions, debris falling on an individual, or from storm-related vehicle accidents. Other types of general damage to personal and real property may be caused by high blizzard winds.

Updates from 2016 Plan	**Action (Language from 2016 LCMHP)**	**2016 Project Status**	**2021 Project Status Update**		
	Generators	New	Same. Working toward installing generators for critical facilities		
	406 Funding	New	Same. Including 404 Funding in addition		
	Website/Media Outreach	New	Ongoing		
	Infrastructure Protection	New	Ongoing		
New for 2021 Plan	**Action**	**Cost**	**Timeframe**	**Responsible Agency**	**Status**
	Educational programs on severe summer and winter storm mitigation and preparedness by using local media, social media, informational sessions and hosting a preparedness fair.	$6,000.00	2022, 2024, 2026	Lincoln County Emergency Management Agency	New Program

Wildfires: In Lincoln County, the most likely immediate damages caused by a wildfire are injuries, possible loss of life, loss of prime timberland, and the destruction of personal and real property, especially homes. The loss of electrical power is possible, since the majority of high voltage transmission lines pass through heavily wooded areas. The very presence of a wildfire may close commerce, resulting in major losses of income for local businesses. Subsequent damages might include flooding if the land has been cleared of vegetation by wildfire.

Updates from 2016 Plan	**Action (Language from 2016 LCMHP)**	**2016 Project Status**	**2021 Project Status Update**		
	Public Education	New	Same		
	Mutual Aid	New	Same		
	Grant Applications	New	Same		
New for 2021 Plan	**Action**	**Cost**	**Timeframe**	**Responsible Agency**	**Status**
	Educational programs on wildfire mitigation and preparedness by using local media, social media, informational sessions and hosting a preparedness fair.	$6,000.00	2022, 2024, 2026	Lincoln County Emergency Management Agency	New Program

Drought: Drought is a deficiency in precipitation over an extended period, usually a season or more, resulting in a water shortage causing adverse impacts on vegetation, animals, and/or people.[38] Because drought classification is relative to average local precipitation, surface, and groundwater levels, all of Lincoln County is susceptible to drought. In Lincoln County, drought affects areas of agriculture, as well as public and private aquifers and wells. See Element B – Risk Assessment, for more details on drought and areas susceptible to drought in Lincoln County.

Updates from 2016 Plan	**Action (Language from 2016 LCMHP)**	**2016 Project Status**	**2021 Project Status Update**		
	n/a	n/a	n/a	*Drought was not included as a hazard in the 2016 Plan Update	
New for 2021 Plan	**Action**	**Cost**	**Timeframe**	**Responsible Agency**	**Status**
	Educational programs on drought mitigation and preparedness by using local media, social media, informational sessions and hosting a preparedness fair.	$6,000.00	2022, 2024, 2026	Lincoln County Emergency Management Agency	New Program

[38] "Drought Public Fact Sheet." National Oceanic and Atmospheric Administration. Received September 9, 2021 from https://gml.noaa.gov/obop/mlo/educationcenter/students/brochures%20and%20diagrams/noaa%20publications/Drought%20Fact%20Sheet.pdf

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?

PRIORITIZED COUNTY-WIDE MITIGATION PROJECTS

The Lincoln County Hazard Mitigation Planning Team established priorities by hazard for the general mitigation actions. The Team used the following criteria to rank each of the actions:

- Life safety
- Population benefited
- Probability of community acceptance
- Probability of funding
- 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

Project	Life Safety	Population Benefited	Probability Community Acceptance	Probability Funding	Feasibility of Implementation	Total Score
Educational programs on preparedness for drought by using local media, social media, informational sessions and hosting a preparedness fair.	**3**	**3**	**3**	**3**	**3**	**15**

Rating of Severe Summer and Winter Storm Mitigation Actions						
Project	**Life Safety**	**Population Benefited**	**Probability Community Acceptance**	**Probability Funding**	**Feasibility of Implementation**	**Total Score**
Educational programs on preparedness for severe summer and winter storms by using local media, social media, informational sessions and hosting a preparedness fair.	**3**	**3**	**3**	**2**	**2**	**13**

Rating of Drought Mitigation Actions						
Project	**Life Safety**	**Population Benefited**	**Probability Community Acceptance**	**Probability Funding**	**Feasibility of Implementation**	**Total Score**
Educational programs on preparedness for drought by using local media, social media, informational sessions and hosting a preparedness fair.	**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**
Educational programs on preparedness for wildfires by using local media, social media, informational sessions and hosting a preparedness fair.	**2**	**2**	**2**	**1**	**1**	**8**

PRIORITIZED LOCAL MITIGATION PROJECTS

Criteria for prioritization.

Projects listed in priority order. Most of the municipalities in Lincoln 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 tables.

The list of local projects was developed separately by municipalities and in consultation with the County. 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 as reported in the LCHMP Risk Assessment
- local knowledge of project priorities, based on frequency and severity of damages
- local knowledge of the benefits that could result from the projects vs. the assumed costs of the projects
- local knowledge of the weather, the geography and topography of the community
- technical and financial abilities of their respective communities to address hazards and mitigate the impacts of hazards.

Use of a cost-benefit analysis.

Since most Lincoln County communities have tight budget constraints, in virtually all cases involving expenditure of local funds, there will be a very rigorous, line-by-line analysis of cost effectiveness during the budget review process and 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. Information on damages from historic natural disasters (Element B2) and potential loss models (Element B3) provided in the LCHMP form the basis and increases the scope of cost-benefit reviews completed by participating jurisdictions. For purposes of grant applications, however, MEMA and the County EMA have made it clear to local officials that a formal cost benefit analysis will have to be prepared when they apply for mitigation funding.

The projects carried over from the 2016 update have not been adjusted for inflation or changes in project costs.

Implementation and Administration.

Participating jurisdictions report their implementation strategy by providing the responsible agency, projected time frame, and updated status for each reported mitigation action. The Planning Team administers reporting of current, completed, and deferred mitigation actions within the LCHMP, and responsible agencies within jurisdictions administer mitigation actions and are responsible for reporting any changes in progress.

While Lincoln County EMA and LCRPC do not have any direct authority to implement hazard mitigation actions in the municipalities, they do oversee preparation of the 2021 LCHMP update, support hazard mitigation training and coordination of local EMA directors, and may potentially participate in grant application development.

Project Status.
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."

Timeframe.

Some of the projects have been completed, as indicated in the table of projects. Some are newly listed. However, the vast majority of projects are carry-overs from the 2016 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.

The time frames start when funding becomes available and permitting is completed.

- 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. Therefore, for all of the reasons stated above, projects with the status "Deferred – lack of funds" may have to be carried over to the next planning cycle unless more funding opens up in the coming years. The influx of funds from the Federal government for mitigation, adaption, and hazards planning may positively affect these time frames. As of the 2021 writing funds have not specifically been allocated, but the Planning Team anticipates more projects able to be completed with the increase in federal spending from COVID-19 rebuilding funding packages.

Potential Funding Sources.

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

- Local tax money
- MaineDOT local road assistance funds https://www.maine.gov/mdot/csd/lrap/
- FEMA Hazard Mitigation Assistance (HMA) grant funds https://www.maine.gov/mema/grants/mitigation-grants
- Maine Department of Environmental Protection (DEP) culvert grants https://www.maine.gov/dep/land/grants/stream-crossing-upgrade.html
- Community Development Block Grant (CDBG) funds https://www.maine.gov/decd/community-development/cdbg-program
- Other (e.g. private benefactors, emerging grant programs)
- American Rescue Plan funding for municipalities and Lincoln County https://home.treasury.gov/policy-issues/coronavirus/assistance-for-state-local-and-tribal-governments/state-and-local-fiscal-recovery-funds

Most high priority mitigation actions will be funded by local tax money as local budgets allow. However, the County and relevant state and federal agencies will assist communities that are interested in applying for the alternative funding sources listed above.

Reducing Impacts of Hazards Identified in the Risk Assessment.

The mitigation actions listed below are a response to the hazards profiled within the risk assessment and informed by community survey results. Upon implementation, these actions will reduce long-term risks to communities in Lincoln County. Some general examples of these actions include road elevation and culvert improvement projects to mitigate flooding risks; installing generators in critical facilities to ensure that services will be available when needed; vegetation management plans to reduce potential power outages during severe summer and winter storms or also to reduce fuels for reducing wildfire risk; improving drainage and stormwater retention to locally reduce flooding and erosion risks; installing dry hydrants in newly developed areas to reduce wildfire risk; and hosting educational programs to inform residents of mitigation programs and actions to reduce risk.

References to culvert projects refer to upsizing or lengthening culverts, unless otherwise stated. According to Culvert Sizing Design Guidance approved by the Maine Department of Transportation Environmental Office in 2015[39], upsizing and lengthening culverts is an important mitigation practice to improve flow conditions and reduce the extent and likelihood of flood damage caused by undersized or poorly designed/maintained culverts. Similarly, projects that reference ditching and elevating roads are intended to avoid road surface flooding and associated transportation and emergency response vulnerabilities.

Municipal Mitigation Actions

Updates have been added to the Mitigation Actions tables included in the 2016 Plan, as some may have been carried over, completed, or abandoned. Through the Municipal Feedback Forms[40], municipalities were asked to submit specific projects, costs ranges, timelines, and authorities to respond to natural hazards.

Given new MEMA funding capabilities and allowances, municipalities were encouraged to list projects that included engineering or scoping costs as a separate line item. They are now able to source funding specific to that task.

[39] https://www.maine.gov/mdot/edi/docs/CulvertSizing52115.pdf

[40] Examples of the 'Municipal Feedback Forms' can be found in Appendix B of this document

Tables – Municipal Mitigation Actions:

Town	2016 Project (in Order of Priority)	Cost	Timeframe	Responsible Agency	Status	**2021 Update Notes**
Alna	1) Egypt Rd; Install cast in place headwalls on intake and outlet.	$12,000	Medium Term	Road Commissioner	Deferred — lack of funds	Completed
	2) Baily, Lothrop, and Sheepscot Rd;Stone line plunge pool 40' x 8' x 3'.	$2,000	Short Term	Road Commissioner	Deferred — lack of funds	Sheepscot Road – completed
	3) Baily Rd; Add 48" x 40' HDPE culvert and elevate road 18' x 60' x 2' and stabilize shoulders.	$20,000	Medium Term	Road Commissioner	Deferred — lack of funds	Deferred
	4) Lothrop Rd; Add (4) 24" x 40' HDPE cross culverts and rip rap intake andoutlets.	$12,000	Medium Term	Road Commissioner	Deferred - lack of funds	Completed

Town	2016 Project (in Order of Priority)	Cost	Timeframe	Responsible Agency	Status	Updates as of 2021
Boothbay	1) Dover Rd; Upsize (4) 8" x 40' culverts with 15" x 40' HDPE culverts and rip rap intake and outlets.	$14,000	Medium Term	Road Commissioner	Deferred - lack offunds	Ongoing
	2) East & West Side Rd. on Barters Island; Ditch 8,000' and add check dams as needed, upsize (8) culverts with 18" x 40' HDPE culverts and remove ledge as needed.	$52,000	LongTerm	Road Commissioner	Deferred — lack offunds	Ongoing
	3) Ocean Point Rd (shore Rd.) Stabilize banks 7,500' x 20' on average.	$90,000	LongTerm	Road Commissioner	Deferred — lack offunds	Ongoing
	4) Back River Cross Rd; Upsize existing 36" x 40' culvert with 8' x 4' x 40' bottomless box and riprap intake and outlet.	$45,000	LongTerm	Road Commissioner	Deferred — lack offunds	Ongoing
	5) Pension Ridge Rd; Upsize 12" x40' culvert with 24" x 40' HDPE culvert and rip rap intake and outlet.	$3,000	Short Term	Road Commissioner	Deferred - lack offunds	Finished
	6) King Philips **Trail;** Stabilize shoulders 2,500' x 20' and upsize existing Culvert with 24" x 40' HDPE and rip rap intake and outlet.	$35,000	Medium Term	Road Commissioner	Deferred — lack offunds	Ongoing

Town	2016 Project (in order of priority)	Cost	Timeframe	Responsible Agency	Status	Updates as of 2021
Boothbay Harbor	1) Townsend Ave, Atlantic Ave, and Union St; Upsize underground drainage 5,000' x 12" with 5,000' x 28" and add (30)catch basins.	$275,000	Long Term	Public Works.	Deferred - lack offunds	Deferred
	2) Spruce world Beach Rd; Upsize 24" x 40' cmp with 36" x 40' HDPE culvert andrip rap intake and outlet.	$5,000	Medium Term	Public Works.	Deferred - lack offunds	Deferred

Town		New for 2021 Project (in order of priority)	Cost	Timeframe	Responsible Agency	Status
Boothbay Harbor	Boothbay Harbor Sewer District WWTP	North Shoreline Stabilization WWTP Perimeter Barrier WWTP Flood Barriers Reinforcement of Buildings Elevate Chlorine Contact Tank	$100,000 $1,800,000 $307,500 $3,200,000 $200,000	2022 - 2025 2022 - 2025 2024 - 2027 2030 – 2040 2030	Sewer District Sewer District Sewer District Sewer District Sewer District	In Design In Design In Design In Planning In Planning
		Elevate Structures and Equipment: PS 06 PS 02 PS 03 PS 07 PS 12 PS 13 PS 14 PS 15 PS 16	 $95,000 $295,000 $295,000 $45,000 $27,000 $27,000 $27,000 $27,000 $27,000	 2028 2022 2022 2022 2024 2024 2024 2025 2025	 Sewer District Sewer District Sewer District Sewer District Sewer District Sewer District Sewer District Sewer District Sewer District	 In Planning In Design In Design In Design In Planning In Planning In Planning In Planning In Planning
	Sewer District Collection System Manholes	Install Emergency Power PS 02 PS 03 PS 14 PS 16 PS 17 Flood Proof Manholes In Flood Surge Areas Metering Manhole	 $25,000 $25,000 $20,000 $20,000 $25,000 $7,000 $6,000	 2022 2022 2023 2023 2024 2028 2028	 Sewer District Sewer District Sewer District Sewer District Sewer District Sewer District Sewer District	 In Design In Design In Planning In Planning In Planning In Planning In Planning

Town	2016 Project (in order of priority)	Cost	Timeframe	Responsible Agency	Status	Updates as of 2021
Bremen	1) Rial Herald Rd; Ditch 5,000', upsize and realign existing cmp with 24" x 40' squash pipe.	$25,000	Medium Term	Road Commissioner	Deferred - lack offunds	Deferred – lack of funds
	2) Town Hall; Install French drains 100'and reseed.	$4,000	Short Term	Road Commissioner	Deferred — lack offunds	Deferred – lack of funds

Town	2021 Project (in order of priority)	Cost	Timeframe	Responsible Agency	Status
Bremen	Tree pruning to cut down on power outages on Fogler Road.	Uncalculated	Short term	Fire Department	Ongoing

own	2016 Project (in Order of Priority	Cost	Timeframe	Responsible Agency	Status	Updates as of 2021
Bristol	1) Split Rock Road; Upsize culverts and lift road above flood level.	Unknown	Short Term	Road Commissioner	Newly Listed	Planned for 2023-2024
	2) Route 130; In conjunction with MaineDOT, elevate road above flood stage.	Unknown	Short Term	Road Commissioner	Newly Listed	Need MDOT Input

Town	2021 Project (in order of priority)	Cost	Timeframe	Responsible Agency	Status
Bristol	Install fixed generator at Bristol Town Office	$15,000 – 20,000	2022	Selectboard	Ongoing

Town	2016 Project (in order of priority)	Cost	Timeframe	Responsible Agency	Status	Updates as of 2021

Damariscotta	1) Miles St; Stabilize road shoulder with fracture stone 500' x 10'.	$40,000	Medium Term	Public Works	Engineering cost estimates prepared	Cost - $160k from most recent bid. ON HOLD
	2) Egypt Rd; Elevate road 300' x 21' x 2', add 36" x 40' HDPE culvert and repave.	$32,000	Medium Term	Public Works	Engineering cost estimates prepared	Low Priority
	3) Back Meadow Rd; Elevate 100' x 5' x 21' stabilize shoulders and repave.	$18,000	Short Term	Public Works	Engineering cost estimates prepared	Low Priority
	4) Chapman St; Divert water away from homes behind shopping center.	$45,000	Long Term	Public Works.	As part of $750,000 CDBG grant, new box culvert installed near Church Street to improve storm water drainage on Chapman, Hodgdon, Church and Pleasant Streets.	
	5) Vine Street; Construct drainage system to reduce flooding of adjacent residential & commercial properties.	Unknown	Long Term	Public Works	New	Currently awaiting responses from contractors. Bid opening 3/11/21

6) Belvedere Road; Upsize 4 culverts to improve drainage	Unknown	Medium Term	Public Works	New; one culvert close to Route 1 bypass upsized. 2 culverts to be upsized in 2017; one in 2018.	
8) Municipal Parking Lot; Construct floodwall and reconstruct parking lot to reduce flooding.	Unknown	Long Term	Public Works	New; preliminary engineering completed in 2014	In progress
9) Areas vulnerable to sea level rise; Fortify areas subject to flooding due to sea level rise including downtown, Miles Road, Oyster Creek (on Belvedere).	Unknown	Long Term	Public Works	New	Tidal Influence
10) Great Salt Bay School Shelter; Install generator.	$50,000	Short Term	Public Works	New	3-phase needed, money is a limiting factor.
11) YMCA Shelter; Install generator	$21,887	Short Term	Public Works	New	Working with YMCA
12) Dynamic flood model; simulate future flood vulnerabilities under anticipated future sea level rise and storm intensity	$138,000	18 months	U.S. Army Corps of Engineers	New, preliminary model results mostly complete, in collaboration with NOAA, state agencies, and town of Damariscotta	

Town	2021 Project (in order of priority)	Cost	Timeframe	Responsible Agency	Status
Damariscotta	Schooner Street Culvert	TBD	TBD	Miles Health	New. Culvert is too small to handle flash flooding
	Church Street Bridge	TBD	TBD	Town. Possible help from Fish Passage	New

Town	2016 Project (in order of priority)	Cost	Timeframe	Responsible Agency	Status	Update as of 2021

Dresden	1) Bog Rd; Upsize existing multiple culverts with 10' bottomless HDPE culvertwith precast footing and rip rap intake and outlets	$35,000	Long Term	Road Commissioner	Deferred — lack offunds	Completed 2021
	2) Calls Hill Rd; Upsize existing 48" x 40' cmp with 60" x 50' HDPE culvert and rip rap intake and outlet.	$12,000	Long Term	Road Commissioner	Deferred - lack offunds	Completed 2021

Town	2021 Project (in order of priority)	Cost	Timeframe	Responsible Agency	Status
Dresden	1). Project scoping costs/pre-construction costs to identify best solutions for Orchard Hills road flood prevention.	TBD	Medium Term - 2022	Road Commissioner	Deferred – lack of funds
	2). Road stabilization of Orchard Hills Road to prevent flooding during heavy down pours and shows. 3 culverts with precast footing and rip rap intake and outlets.	TBD	Medium Term – 2022	Road Commissioner	Deferred – Lack of funds

Town	2016roject (in order of priority)	Cost	Timeframe	Responsible Agency	Status	Update as of 2021
Edgecomb	1) Mount Hunger Rd Site 1; Ditch 1,200' and remove ledge in ditch line as neededApprox. 150 cyd.	$8,000	Short Term	Road Commissioner	Deferred — lack of funds	Road ditched, significant (not all) ledge removed. No problems in last 2 years. Consider complete.
	2) Spring Hill Farms Rd; Ditch 1,500' andremove ledge in ditch line as needed approx. 150 cyd.	$9,000	Short Term	Road Commissioner	Deferred — lack of funds	Complete
	3) Mount Hunger Rd Site 2; Elevate 1,000'x 21' x 12" and upsize (4) existing culverts with 24" x 40 HDPE culverts..	$40,000	Long Term	Road Commissioner	Deferred - lack of funds	Road has been elevated. 2 culverts
	4) Parsons Point Rd; Ditch 1,500' andremove ledge in ditch line as needed approx. 300 cyd.	$12,000	Short Term	Road Commissioner	Deferred — lack of funds	Complete
	5) Old County Rd; Ditch 1,200' and remove ledge in ditch line as needed approx. 100 cyd. And upsize 36" x 40' cmp with 48" x 40 HDPE culvert.	$16,000	Long Term	Road Commissioner	Deferred — lack of funds	Complete

Town	2021 project (in order of priority)	Cost	Timefra me	Responsible Agency	Status
Edgecomb	Mill Road, east side of bridge approach	TBD	TBD	Road Commissioner	Diring extreme tides with strong south winds, some erosion around boulders under road. May need addressing at some point in the future, monitoring. Not a concern in short term.
	McKay Rd	TBD	TBD	State aided road	One section (couple hundred feet) floods periodically during heavy rain storms.

Town	2016 Project (in order of priority)	Cost	Timeframe	Responsible Agency	Status	Update as of 2021
Jefferson	1) Goose Hill Rd; Ditch and line 600' andadd 18" x 40' HDPE cross culvert.	$8,000	Medium Term	Road Commissioner	Deferred - lack offunds	Completed
	2) Hodgkin's Hill Rd; Upsize existing twin 15" x 40' cmps with 36" x 40' HDPE culvert. and berm upstream side of road 100' x 12" x 12".	$6,000	Medium Term	Road Commissioner	Deferred — lack offunds	Completed
	3) Hinks Rd; Upsize existing 18" x 40'cmp with 24" x 40' HDPE culvert.	$3,500	Short Term	Road Commissioner	Deferred — lack offunds	Completed
	4) 401 Hinks Rd; Elevate furnace and circuit breaker box in basement.	$2,000	Short Term	Town Selectmen	Deferred — lack offunds	Completed
	5) Sennett Rd; Ditch 500' and removeledge as needed.	$3,000	Long Term	Road Commissioner	Deferred — lack offunds	Completed

Town	2021 Project (in order of priority)	Cost	Timeframe	Responsible Agency	Status
Jefferson	New culverts removed ledge as needed building the road up. Munsey Road	$10,000	Short term	Road Commissioner	Working on
	Egypt Road – ditching, remove ledge, building road up	$80,000	Long term	Road Commissioner	Planning Stages
	Damn repair	$1,000	Long term	Selectman	Completed

Town	2016 Project (in order of priority)	Cost	Timeframe	Responsible Agency	Status	Update as of 2021
Monhegan Island	1) Lighthouse Hill Rd; Elevate 2,000' x 10'x 2' shape and add 15" x 20' cross culvert.	$104,000	Long Term	Road Commissioner	Deferred — lack of funds	Confirm with Road Commissioner if still a project and cost increase and confirm # and diameter of culverts needed
	2) Fire Station/ Emergency shelter; Replace existing 30' x 24' building with two story building of same detentions and add backup generator.	$120,000	Long Term	Town Selectmen	Deferred — lack of funds	Renovate to address foundation, access doors, and extension to accomidate equipment. New cost: $200,000- $250,000 Annually saving fund, re-negotiate easement, resubmit LUPC permit, move transformer. goal to break ground autumn 2021
	3) Monhegan Cemetery; Stabilize wall 800'x 4'with geotextile, stone and indigenous plantings.	$42,000	Medium Term	Plantation Board of Assessors	Deferred - lack of funds	Deferred - lack of funds & staff capacity
	4) Horn's Hill / Burnt Head Rd; Elevate 200' x 10' x 2' upsize existing 12" 20' cmp with 15" x 20' HDPE culvert, add 15" x 20'HDPE cross culvert and rip rap 50' x 1' x 1'	$16,000	Long Term	Road Commissioner	Deferred — lack of funds	Ask Road Commissioner if still a project and cost increase and confirm # and diameter of culverts needed

Town	New for 2021 Project (in order of priority)	Cost	Time Frame	Responsible Agency	Status	Update as of 2021
Monhegan Associates Inc. (land trust)						
	NEW-1) 350 acres of 513 Acre Monhegan Island - **Project Scoping for** fuel reduction forest fire prevention activities	unknown	Short Term	MAI Board of Trustees	New - Planning Phase	new, added 3/26/21
	2) 350 acres of 513 Acre Monhegan Island - Fuel reduction forest fire prevention activities	unknown	Short Term	MAI Board of Trustees	New - Planning Phase	new
Monhegan Plantation	1) Mooring Chain Road; Remove bridge, replace with 1 of __" x 20' HDPE culvert and build road with 44 cyds. fill (per DOT recommendation)	$ 8,736.00	Short Term	Road Commissioner	$2718 spent in 2020; budgeted for $8736 in 2021	on track for 10/2021 thru 12/2021
	3) Monhegan Avenue at Tribler Road Intersection: Replace CMP with 4 of __" x 20' HDPE culverts	$ 2,500.00	Short Term	Road Commissioner	on Roads Dept. list since 2010, budgeting for 2022	Scheduled for 2022
	4a) Monhegan village outside coastal flood hazard zone plus 1-3 ft. sea level rise; **Project Scoping for** Drought Mitigation of Public Water Supply	unknown	Short Term	Monhegan Water Company	New - Planning Phase	new

	NEW-4b) Bog Meadow Aquifer, Monhegan Village to limits of Water Company Distribution System; **Project Scoping for** public water supply adaptation, contingency & mitigation plan addressing water company operations in the face of new drought conditions and other emerging natural hazards	unknown	Short Term	Monhegan Water Company	New - Planning Phase	new, added 3/26/21
	NEW-4c) Bog Meadow Aquifer, Monhegan Village to limits of Water Company Distribution System; Implementation of public water supply adaptation, contingency & mitigation plan addressing water company operations in the face of new drought conditions and other emerging natural hazards	unknown	Short Term	Monhegan Water Company	New - Planning Phase	new, added 3/26/21
	5) Water Lane; Install chlorinator pump system	unknown	Short Term	Monhegan Water Company	New - Planning Phase	new
	6) Bog Meadow near Water Lane; Install well point(s)	$ 2,000.00	Short Term	Monhegan Water Company	New - Planning Phase	new
	7a) Monhegan village outside coastal flood hazard zone plus 1-3 ft. sea level rise; relocate origin of public fresh water supply by installation of	unknown	Short Term	Monhegan Water Company	New - Planning Phase	new

	well points in area with reduced saltwater intrusion vulnerability					
	NEW-7b) Monhegan Village: **Project Scoping for** education, identification and mitigation of chemical contamination of wells to avoid exacerbated contamination situations triggered via drought, sea level rise, and/or flood-induced groundwater level changes	unknown	Short Term	Monhegan Water Company	New - Planning Phase	new, added 3/26/21
	NEW-7c) education, identification and mitigation of chemical contamination of wells to avoid exacerbated contamination situations triggered via drought, sea level rise, and/or flood-induced groundwater level changes	unknown	Short Term	Monhegan Water Company	New - Planning Phase	new, added 3/26/21
	8) Monhegan Wharf near Wharf Road; **Project Scoping for** Elevating and stabilizing wharf surface	unknown	Short Term	Plantation Board of Assessors	new - planning phase	new
	9a) Monhegan Wharf near Wharf Road; Elevate and stabilize wharf surface	unknown	Short to Medium Term	Plantation Board of Assessors	new - planning phase	new
	NEW-9b) Monhegan Village bordering Monhegan Associates (land trust); **Project Scoping for** fuel reduction forest & structure fire prevention activities	unknown	Short to Medium Term	Plantation Board of Assessors	new - planning phase	new, added 3/26/21

	NEW-9c) Monhegan Village bordering Monhegan Associates (land trust); fuel reduction forest & structure fire prevention activities	unknown	Short to Medium Term	Plantation Board of Assessors	new - planning phase	new, added 3/26/21
	N/A) Monhegan Avenue at Swim Beach Lane; Build retaining wall and elevate road to prevent large-scale saltwater intrusion into island's sole source aquifer - SEE NEW ENTRIES 10)-14) and 16)-17)	*unknown at present, awaiting engineering consultation following review of 2015 flood plain map revision*	*Medium Term*	*Plantation Board of Assessors*	*Deferred - lack of funds*	***This listing replaced by new listings based on 12/31/19 Resiliency Study by Baker Design Consultants - SEE NEW ENTRIES 10)-14) and 16)-17)***
	10) Monhegan Breakwater near & at Fish Beach Lane - **Project Scoping for** Breakwater design & feasibility of emergency stockpiling for Breakwater repairs	unknown	Medium Term	Plantation Board of Assessors	New - Planning Phase	new
	11) Monhegan Breakwater near & at Fish Beach Lane - **Project Scoping for** Elevation & Stabilization of Fish Beach Lane	unknown	Short Term	Plantation Board of Assessors	New - Planning Phase	new
	12) Monhegan Avenue/Swim Beach Lane/Bog Meadow Drainage; **Project Scoping for** Flood Mitigation	unknown	Short Term	Plantation Board of Assessors	New - Planning Phase	new
	13) Monhegan Breakwater near & at Fish Beach Lane; Attach Monhegan Breakwater to shoreline with approx. 50 ft. granite fill/armor extension,	$899,800-$1,735,925	Medium Term	Plantation Board of Assessors	New - Planning Phase	new

	Elevate Monhegan Breakwater with armoring granite block, Elevate & stabilize Fish Beach Lane roadway & corridor					
	14) Monhegan Harbor near Fish Beach Lane; Stockpile stone armor for emergency breakwater repairs (estimated 2100 CY)	$325,000-$350000	Medium Term	Plantation Board of Assessors	New - Planning Phase	new
	15) Monhegan Island; **Project Scoping for** dry hydrant & pump installations and Lighthouse Hill fire suppression system	unknown	Long Term	Fire Chief & Plantation Board of Assessors	new - planning phase	new
	16) Monhegan Avenue/Swim Beach Lane/Bog Meadow Drainage; Install tidal check valve & make subsurface stormwater improvements including resetting culvert and installing catch basin, outfall pipe and riprap & elevate nearby structures, Elevate & Stabilize Monhegan Avenue roadway & corridor	$426,600-$1,203,400	Long Term	Plantation Board of Assessors	New - Planning Phase	new
	17) Monhegan Avenue/Swim Beach Lane/Bog Meadow Drainage; Install tidal check valve & make subsurface stormwater improvements including resetting culvert and installing catch basin, outfall pipe and riprap and elevate nearby structures, Elevate & Stabilize Monhegan Avenue roadway	$346,900-$1,190,600	Long Term	Plantation Board of Assessors	New - Planning Phase	new

	& corridor, Construct flood wall and opening gate					
	18) Monhegan Cemetery at Tribler Road; Project Scoping for wall stabilization	unknown	Medium Term	Plantation Board of Assessors	new - planning phase	deferred due to lack of municipal capacity and funding
	19) Lighthouse Hill at or near Tower Lane; Installation of fire suppression system using pumps connected to existing or new water storage tank(s)	unknown	Long Term	Fire Chief & Plantation Board of Assessors	new - planning phase	new
	20) Monhegan Wharf near Wharf Road; install dry hydrant & pump(s) (salt water application)	unknown	Long Term	Fire Chief & Plantation Board of Assessors	new - planning phase	new
	21) Ice Pond near Ice Pond Road; install dry hydrant	unknown	Long Term	Fire Chief & Plantation Board of Assessors	new - planning phase	New
	22) Monhegan Avenue South Fire Station; Install generator	$ 25,000.00	Medium Term	Plantation Board of Assessors	Planning Phase Deferred until Fire Station building needs addressed	still deferred due to municipal capacity and funding

	23) Monhegan Avenue School EOC/Shelter; Install generator)	$ 25,000.00	Long Term	Plantation Board of Assessors	New - Planning Phase	new
	NEW-24) Monhegan Village: **Project Scoping for** capturing/storing/using surface water and grey water sources	unknown	unknown	Plantation Board of Assessors	New - Planning Phase	new, added 3/26/21
	NEW-25) Monhegan Village: installation of systems for capturing/storing/using surface water and grey water sources	unknown	unknown	Plantation Board of Assessors	New - Planning Phase	new, added 3/26/21
Monhegan Lighthouse Museum	NEW-1) Lighthouse Hill at or near Monhegan Museum; **Project Scoping for** installation of underground fire suppression system	unknown	Short-Medium Term	Museum Board of Trustees	new - planning phase	new, added 3/26/21
	NEW-2) Lighthouse Hill at or near Monhegan Museum; Installation of underground fire suppression system	unknown	Short-Medium Term	Museum Board of Trustees	new - planning phase	new, added 3/26/21

Town	2016 Project (in order of priority)	Cost	Timeframe	Responsible Agency	Status	Update as of 2021
Newcastle	1) East Old County Rd; Ditch and line 2,400' upsize (2) 12" x 40' cmps with 18" x40' HDPE culverts and add (2) 18" x 40' HDPE cross culverts.	$36,000	Long Term	Road Commissioner	Deferred — lack of funds	Completed
	2) North Dyer Neck Rd; Ditch and line 2,200' and add (5) 18" x 40' HDPE cross culverts.	$40,000	Long Term	Road Commissioner	Deferred — lack of funds	Completed
	3) Station Rd; Ditch and line 2,600' and add (2) 18" x 40' HDPE cross culverts.	$38,000	Long Term	Road Commissioner	Deferred - lack of funds	Adding ditch and grading. Increased cost projection.
	4) Indian Trail Rd; Ditch 1,600' and add (4) 18" x 40' HDPE culverts and rip rap intake and outlets.	$16,000	Long Term	Road Commissioner	Deferred — lack of funds	Waiting funding

Town	2021 Project (in order of priority)	Cost	Timeframe	Responsible Agency	Status
Newcastle	1) West Old County Rd; Replace all cross pipes, ditch & grade	$311,000	Current	Road Commissioner	In progress
	2) Station Rd; Replace all cross pipes, ditch & grade	$400,000	2022	Road Commissioner	Waiting funding
	3) Kings Highway; Replace all cross pipes, ditch & grade	$250,000	Long Term	Road Commissioner	Deferred - lack of funds
	4) Glidden Street; Replace subsurface drainage, basins, & road reconstruction	$1,000,000	Long Term	Road Commissioner	Deferred — lack of funds

Town	2016 Project (in order of priority)	Cost	Timeframe	Responsible Agency	Status	Update as of 2021
Nobleboro	1) Install fixed generator at NobleboroMunicipal facility/Fire Station	$35,196	Short Term	Select Board Electrician	New — DR-4108 HMGP grant; expect summer 2016 installation	COMPLETED
	2) Bremen / Duck Puddle Rd; Elevate 300'x 21' x 5' upsize existing culvert with 10' x 8' x 50' box culvert and rip rap intake and outlet' and repave.	$65,000	LongTerm	Joint project with Nobleboro and Waldoboro	Deferred — lack of funds	CARRIED OVER
	3) Upper Cross Rd; Ditch 7,000' add (2) 24" x 40' HDPE cross culverts and (7) 15" x 20' HDPE driveway culverts.	$21,000	LongTerm	Road Commissioner	Deferred - lack of funds	CARRIED OVER

Town	2021 Project (in order of priority)	Cost	Timeframe	Responsible Agency	Status
Nobleboro	1) Bremen / Duck Puddle Rd; Elevate 300'x 21' x 5' upsize existing culvert with 10' x 8' x 50' box culvert and rip rap intake and outlet' and repave.	$150,000	Long Term	Joint project with Nobleboro and Waldoboro	2021 Deferred — lack offunds
	2) Upper Cross Rd; Ditch 7,000' add (2) 24" x 40' HDPE cross culverts and (7) 15" x 20' HDPE driveway culverts.	$150,000	Long Term	Road Commissioner	Deferred - lack of funds
	NEW 3). Repair 150' of water erosion on the north side of Belvedere Rd, and Oyster Creek with Rip Rap and gravel. Replace 150' of guardrail. Hot top area of construction.	$200,000	Short Term	Road Commissioner	Ongoing

Town	2016 Project (in order of priority)	Cost	Timeframe	Responsible Agency	Status	Update as of 2021
Somerville	1)Install fixed generator the SomervilleFire Station	$32,000	Long Term	Select Board, Electrician	New	Unable to achieve warming station capability - deferred
	2) Crummett Mountain Rd; Elevate 250' x 21' x 2' and add 24" x 40' HDPE overflow culvert.	$25,000	Long Term	Road Commissioner	Deferred - lack of funds	Completed
	3) Colby Rd; Relocate roadway 250' x 5' and add driveway culvert 15" x 20', ditch 1,000' and add check dams as needed.	$26,000	Long Term	Road Commissioner	Deferred — lack of funds	Completed

Town	2021 Project (in order of priority)	Cost	Timeframe	Responsible Agency	Status
Somerville	Easements for communications tower S. Colby road – Generator for transmitter	Unknown Approx. $10k	ASAP	LC Communications SVFD	Pending
	Additional hydrant for wildfire mitigation	$3 - 5,000	ASAP	SVFD	Pending
	Permanent generators for north and south stations	$18 – 20,000	2021 -2022	SVFD	Pending
	Generator for broadband command center at RSU-12 town owned office	$9 – 10,000	Prior to commencement of broadband service to town	Somerville Selectboard	
	Broadband connections at Somerville Fire North and South stations	Unknown	ASAP after broadband connection	Somerville Selectboard	Pending
	Beaver damn clearing and culvert removal	$2 – 4,000	ASAP	Somerville Road Commissioner	Pending
	Tree removal and trimming at salt shed – North SVFD Station	$1,500 - $2,500	ASAP	Somerville Road Commissioner	Pending

Town	2016 Project (in order of priority)	Cost	Timeframe	Responsible Agency	Status Update as of 2021
South Bristol	1) Carl Baily Road; Ditch east side ofroad.	$2,500	Short Term	Road Commissioner	Completed
	2) Sprit Rock Rd; Upsize existing 24" x 40'cmp with 36" x 40' HDPE culvert, rip rap intake and outlet and repave.	$5,000	Short Term	Road Commissioner	Completed 2015 with 2 culvertsside by side
	3) Clark cove Rd; Upsize existing 24" x 40' cmp with 36" x 40' HDPE culvert, rip rap intake and outlet and repave.	$6,000	Short Term	Road Commissioner	Completed 2015
	4) Carl Baily Rd; Upsize existing 24" x 40' cmp with 36" x 40' HDPE culvert, rip rap intake and outlet and repave.	$5,000	Short Term	Road Commissioner	Completed 2014
	5) Thompson Inn Rd; Upsize existing 18"x 40' cmp with 36" x 40' HDPE culvert, rip rap intake and outlet and repave.	$5,000	Short Term	Road Commissioner	Completed 2014

Town	Project (in order of priority)	Cost	Time frame	Responsible Agency	Status
South Bristol	Ditch along Route 129 from John Gay Road to Coveside Road	$4,000	June	Selectmen	Ongoing
	Ditch top of hill at Split Rock Rd from #233 to stop ice from forming on road	$5,000	ASAP	Selectmen	Ongoing
	Raise road on Split Rock Road east of Sproul Road to prevent flooding	$25,000	July	Selectmen	Ongoing

Town	2016 Project (in order of priority)	Cost	Timeframe	Responsible Agency	Status	Update as of 2021
Southport	1) Campbell Rd; Upsize existing 15" x 50'cmp with 24" x 50' HDPE culvert and stabilize road shoulder 150' x 20' on average.	$12,000	Short Term	Road Commissioner	Deferred — lack of funds	Not completed

Town	2016 Project (in order of priority)	Cost	Timeframe	Responsible Agency	Status
Unorganized Territories	Improve ditches and drainage on county roads	$35,000	Long Term	County Commissioners	Deferred – Lack of Funds

Town	2021 Project (in order of priority)	Cost	Timeframe	Responsible Agency	Status
Unorganized Territories	Improve ditches and drainage on county roads	$35,000	Long Term	County Commissioners	Deferred – Lack of Funds

Town	Project (in Order of Priority	Cost	Timeframe	Responsible Agency	Status	Update as of 2021
Waldoboro	1) Bremen / Duck Puddle Rd; Elevate 300' x 21' x 5' upsize existing culvert with 10' x 8' x 50' box culvert and rip rap intake and outlet' and repave.	$150,000	Long Term	Joint project with Nobleboro Road Commissioner	Deferred — lack of funds	Deferred — lack of funds…Awaiting project initiation from Nobleboro since most of issue in that town.
	2) Feyler's Corner / Old Augusta Rd; Elevate 1,000' x 21' x 2' Upsize (3) 24" x 40'cmps with	$85,000	Long Term	Public Works.	In Progress	Deferred — lack of funds
	36" x 40' HDPE culverts, add (2) 48" x 40' HDPE culverts and repave.			Public Works		COMPLETED
	3) Elm St. Upsize existing culvert with 10' x 6' x 40' box culvert and rip rap intake and outlet.	$60,000	Long Term	Public Works.	Deferred — lack of funds	Deferred — lack of funds
	4) Storer Mountain Rd; Ditch and line 1,000' and add check dams as needed.	$12,000	Short Term	Public Works.	Deferred - lack of funds	COMPLETED
	5) Jackson Rd; Improve ditches 1,000' and add check dams as needed.	$4,000	Short Term	Public Works.	Deferred — lack of funds	COMPLETED
	6) Storer Mountain Road; Upsize existing 5'x36" CMP culvert with 5'x36" HDPE and lower 12-18".	$70,000	Long Term	Public Works	New	Deferred — lack of funds
	7) Marble Avenue; Install (2) 48" x 40' HDPE culverts, rip rap intake and outlet and 800' of ditches	$90,000	Medium Term	Public Works	New	Deferred — lack of funds
	8) Wagner Bridge Road; Elevate 300' x 32' x 4'. Upsize existing 4' x 36' CMP culvert with 5' x 40' HDPE culvert, rip rap intake and outlet and repave.	$50,000	Short Term	Public Works	New	Deferred — lack of funds

Town	2016 Project (in Order of Priority	Cost	Timeframe	Responsible Agency	Status	Update as of 2021
Westport Island	1) Install fixed generator at the Westport Island Fire Station.	$45,000	Short Term	Select Board Fire Dept.	Applied for HMGP grant Jan. 2016	Completed
	2) West Shore Rd; Ditch and line 2,000', remove ledge as needed and add 15" x 30' HDPE cross culvert.	$25,000	Long Term	Road Commissioner	Deferred — lack of funds	Deferred – lack of funds
	3) East shore Rd; Ditch and line 2,000', remove ledge as needed.	$20,000	Long Term	Road Commissioner	Deferred - lack of funds	Updated – Blasting costs: $40,000
	4) Main (town portion) Rd; Ditch 1,000' (near Jewett Cove Road)	$5,000	Short Term	Road Commissioner	Deferred — lack of funds	Ditching, replace culvert and paving $50,000

Town	2021 Project (in Order of Priority	Cost	Timeframe	Responsible Agency	Status
Westport Island	Feasibility/engineering study with implementation guidelines for developing the most cost-effective, practical options for a reliable firefighting water supply: dry hydrants, fire cisterns, equipment to allow the use of salt water without sacrificing the useful life of expensive firefighting equipment, etc.	TBD	Short term	Select Board /Fire Dept	
	Public awareness campaign re fire safety and outside burns, specifically addressing duff	Volunteer	Short term	Fire Dept / EMA	

Installation of new water source to serve south end of island	TBD	Short term	Select Board /Fire Dept	
Engineering study re installation of box culvert on West Shore Road at Squam Creek	TBD	Long term	Select Board / Road Commissioner	
Installation of box culvert on West Shore Road at Squam Creek Crossing	TBD	Long term	Select Board / Road Commissioner	
Engineering study re installation of box culvert on West Shore Road at Heal Cove Crossing	TBD	Long term	Select Board / Road Commissioner	
Installation of box culvert on West Shore Road at Heal Cove	TBD	Long term	Select Board / Road Commissioner	
Engineering study re installation of box culvert on Post Office Road at Squam Creek Crossing	TBD	Long term	Select Board / Road Commissioner	
Installation of box culvert on Post Office Road	TBD	Long term	Select Board / Road Commissioner	
Arborist survey of roads to develop vegetation management plan for the prevention of downed power lines and obstructed roads (5.48 miles State road; 18.95 miles town roads; 18.48 miles private roads)	TBD	Short term	Select Board / Road Commissioner	
Vegetation management plan and a year of cutting the most at-risk trees/limbs for damaging power lines/obstructing roads with an initial evaluation of benefits	TBD	Long term	Select Board / Private contractor	
Installation of solar power source and digital sign at the head of the island	$15,000	Short term	Select Board /EMA	
Doggett Rd: Building up the roadbed and installing a small box culvert	TBD	Long term	Select Board / Road Commissioner	
Engineering/architectural plan for renovating or building new fire department to meet current equipment and safety needs and public accessibility for warming center	TBD	Long term	Select Board / Fire Dept	

	Development of a map with all roadways identifying emergency access routes, vulnerabilities to flooding & other access limitations	Volunteer time	Short term	Select Board / EMA (LCEMA D4H?)	
	Architectural/construction evaluation of Town Office for all-seasons walk-up window solution	TBD	Short term	Select Board / EMA	
	Construction of Town Office all-seasons walk-up window solution for more adaptable service delivery during pandemic or similar events that require adaptable public service solutions	TBD	Long term	Select Board /EMA	
	Small automatic generator for sand & salt shed – can be pulled up manually – very strenuous and time-consuming – lights and fans	$5,000	Short term	Select Board /EMA	

Town	2016 Project (in order of priority)	Cost	Timeframe	Responsible Agency	Status	Update as of 2021
Whitefield	1) Devine Rd; Ditch and line 2,000, add check dams as needed and add 30" x 40'HDPE cross culvert.	$12,000	Medium Term	Road Commissioner	Deferred - lack of funds	Deferred – lack of funds

Town	2021 Project (listed in order of priority)	Cost	Timeframe	Responsible Agency	Status
Whitefield	The parking area at our Sand/Salt shed is in need of repaving. To do this job correctly, 2-3 feet of current surface has to be removed and new gravel put in and compacted before it can be paved. Reason for this is each year we put up to 3500 yards of sand and salt in the shed and the same amount is removed and used on the winter roads. This requires many truckloads of very heavy vehicle traffic on this surface. Therefore, a good foundation should allow it to last much longer. This is something we realize needs to be done, but we just don't have the funding necessary.	TBD	Long term as funding is prohibitive	Selectboard	Deferred – lack of funds
	Town has started a gravel reconstruction program. Several of our gravel roads become impassable for 2-3 weeks in the Spring. This affects emergency vehicle response, mail, schoolbus traffic, as well as residential traffic. It is costly to reconstruct these roads correctly. A solid (new) gravel base has to be put in and geotextile fabric put over the base, and then a foot of gravel put over that. We are redoing 1400' on Hollywood Blvd this year and hope to repair small sections of 2 other roads in town as well. This project will demonstrate how well the reconstructed roads stand up for many years and the need for patching should diminish significantly.	$2 -$5,000 per hundred feet	Long term	Selectboard	Deferred – Lack of Funds
	Town is in the process of acquiring a speed readout sign that can be placed at different locations through the year to help decrease speeding in town. Town will take ownership of this equipment and will have to purchase a trailer to allow it to be relocated easily. Not sure of the cost of the trailer or other equipment needed yet.	T B D	Medium Term	Selectboard	Deferred – Lack of Funds
	Town would also like to install a flashing light system at our elementary school. DOT says it is not their responsibility and the RSU can't/won't do it because of cost and possibly setting a precedent. It appears that for this to happen, the town will have to pay for it. A grant for this would be most appreciated.	Cost is estimated at less than $10K.	Long term	Selectboard	Deferred – Lack of Funds

Town	2016 Project (in order of priority)	Cost	Timefra me	Responsible Agency	Status	Update as of 2021
Wiscasset	1) Foley Rd; Add 24" x 40' overflow HDPE culvert.	$3,000	Short Term	Public Works.	Deferred — lack offunds	Deferred
	2) Loweltown Rd; Upsize existing twin 30"x 40' HDPE culverts with 8' x 4' x 40'bottomless box culvert.	$35,000	Long Term	Public Works.	Deferred - lack offunds	Deferred
	3) Potties Cove Rd; Ditch 200' and add 15"x 40' HDPE cross culvert.	$4,000	Short Term	Public Works.	Deferred — lack offunds	Deferred
	4) Old Dresden Rd; Add (1) 15" x 40' HDPE cross culvert.	$3,500	Short Term	Public Works	Deferred — lack offunds	Deferred
	5) Pinewood Dr; Upsize and realign with 15" x 40' HDPE cross culvert.	$3,500	Short Term	Public Works.	Deferred - lack of funds	Deferred
	6) Public Works Garage; Upsize 400' x 24" culvert with 30" x 400' HDPE culvert.	$30,000	Long Term	Public Works.	Deferred - lack of funds	Deferred

Town	2021 Project (in order of priority)	Cost	Timeframe	Responsible Agency	Status
Wiscasset	Replace culvert on Ferry Landing Road	$600,000	Long term	Public Works	Schedule – passed with town vote
	Tree removal on Willow Lane	$100,000	Short term	Public Works	Deferred – lack of funds

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?

Identification of Local Planning Mechanisms

County government is limited in scope and authority in the State of Maine and does not have the people-power, authority, or fiscal capabilities to guide and control development within the towns in the County. Within Maine, most government authority is with State statutes and rules and with municipal "Home Rule" ordinances.

Municipalities in Lincoln County have already incorporated strategies recommended by or consistent with this Plan into local planning mechanisms as discussed in the paragraphs below. By adopting this plan, each community, as well as Lincoln County, is agreeing to continue implementation of strategies aimed at mitigating hazards identified in this Plan. As documented in Element C, the municipalities in Lincoln County have a variety of planning and regulatory mechanisms for managing land use at the local level, thereby minimizing the exposure of future development to natural hazards. Municipalities in Lincoln County all use the following general planning mechanisms based on their common forms of local government and authority described in Element C1.

In addition to the regular public meetings of their boards of selectmen, all towns in Lincoln 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.

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

- Local flood plain management Ordinances; All municipalities have joined the National Flood Insurance Program and have adopted floodplain management ordinances aimed at managing development in flood-prone areas. In addition, Monhegan Island Plantation is in the 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 Lincoln County are required to have a shoreland zoning ordinance, whether adopted by the municipality, imposed by the Maine Department of Environmental Protection, or under LUPC. 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.

- Local comprehensive plans (most Lincoln County 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 mitigation, public safety and environmental protection are intentionally consistent with the strategies contained in this plan. In general, local comprehensive plans do not include recommendations on specific mitigation projects, although they may contain recommendations that roads and their associated infrastructure be upgraded as funds become available.
- 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).
- 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).

(Note: See Element C1 of this plan for a town-by-town summary of existing authorities, policies, programs and resources available to accomplish hazard mitigation.)

Note: There were very few ordinance-related mitigation measures identified by the Lincoln County Hazard Mitigation Planning Team and those identified were determined to be low in priority for the 2021 update.

Incorporating Mitigation Strategies and Related Information into Local Planning Mechanisms:

County government does not have the authority to control local planning mechanisms. However, the County EMA Director can provide information to local units of government, as well as technical assistance. After adoption of the Mitigation Plan, the Lincoln County EMA Office will assist the municipal officers in implementing their selected mitigation measures and incorporate elements of the LCHMP into other planning mechanisms, where appropriate. The County EMA Office will conduct annual periodic reviews and surveys with the municipal officers and local EMA directors to determine the status of their measures and planning efforts. The County EMA office will assist the municipalities with the completion of FEMA Pre-Disaster Mitigation and Hazard Mitigation Grant packages.

Explanation of How Local Governments Incorporated Strategies and other Information:

In addition to the planning mechanisms discussed above, there has been progress in some additional areas, but no known actions in other areas:

- Comprehensive plans – no State money for new plans or updates
- Emergency management and mitigation planning – limited because of volunteer EMA directors and no budgets
- 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

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 Pre-Disaster and Hazard Mitigation Grant programs, workshops with hazard geo-textiles, and workshops dealing with various sea level rise scenarios and how they may affect specific municipalities.

The responsible agency within each municipality that is responsible for the implementation and completion of each mitigation measure will notify the County EMA Office whenever assistance is needed or whenever a measure is completed. Existing programs such as the municipal road maintenance plan, emergency management program and local fire prevention programs will be utilized to their greatest extent to complete the community's mitigation measures.

ELEMENT D. PLAN REVIEW, EVALUATION, AND IMPLEMENTATION

- D1. Was the plan revised to reflect changes in development? (Requirement §201.6(d)(3))
- D2. Was the plan revised to reflect progress in local mitigation efforts? (Requirement §201.6(d)(3))
- D3. Was the plan revised to reflect changes in priorities? (Requirement §201.6(d)(3))

D1: Was the plan revised to reflect changes in development?

The 2021 Lincoln County Hazard Mitigation Plan update was revised through careful consideration of each Element, municipality, and the changing hazard response landscape. Changes are reflected in the beginning of each Element with a bulleted list of highlighted changes in the coming section. Changes to development in Lincoln County are reflected in population tables, and in Element B about future risk, as well as demographic trends and vulnerability. This information informed mitigation actions and plans.

All participating jurisdictions in Lincoln County experienced minimal developmental changes since the last LCHMP update. Though no changes in development substantially impacted the jurisdiction's overall vulnerability, please refer to Element B3, "Vulnerability of Future Buildings, Infrastructure, and Critical Facilities" and "Assessing Vulnerability: Analyzing Development Trends" for a more detailed assessment.

In addition, the natural disasters of Drought and Pandemic were added given changes in weather patterns and the COVID-19 pandemic of 2020.

D2: Was the plan revised to reflect progress in local mitigation efforts?

The tables within the Mitigation Strategies charts for each municipality in Elements C4- C5 include a 'Status' column that reflects change and/or updates for each project.

D3: Was the plan revised to reflect changes in priorities?

Municipalities provided lists of projects in order of priority, and some listed additional details on their projects and priorities. This information is reflected in the "Mitigation Action" tables under Element C5 for municipalities that responded. The objective of mitigation actions is to reduce long-term risk from natural hazards selected for profiling in this Plan using a related ranking scheme detailed in Element B1, "Rating of Natural Hazards."

ELEMENT E: PLAN ADOPTION

- E1. Does the Plan include documentation that the plan has been formally adopted by the governing body of the jurisdiction requesting approval? (Requirement §201.6(c)(5))
- E2. For multi-jurisdictional plans, has each jurisdiction requesting approval of the plan documented formal plan adoption? (Requirement §201.6(c)(5))

E1. Does the Plan include documentation that the plan has been formally adopted by the governing body of the jurisdiction requesting approval?

Copies of the resolution adopted by The County and municipalities are included in Appendix E. Lincoln County adopted the resolution on behalf of the county and their portion of the Unorganized Territory (Hibberts Gore). [editor's note: these resolutions will be solicited after submission to FEMA and the Plan earns Approval Pending Adoption (APA) status.]

E2. For multi-jurisdictional plans, has each jurisdiction requesting approval of the plan documented formal plan adoption?

This plan is a multijurisdictional plan. Municipalities that participated in the preparation of this plan include the towns of:

- Alna
- Boothbay
- Boothbay Harbor
- Bremen
- Bristol
- Damariscotta
- Dresden
- Edgecomb
- Jefferson
- Monhegan Island Plantation
- Newcastle
- Nobleboro
- Somerville
- South Bristol
- Southport
- Waldoboro
- Westport
- Whitefield
- Wiscasset

Other jurisdictions include:

- Unorganized Territories (Hibbert's Gore and Lincoln County Islands)

APPENDICES

- **Appendix A**
  - Agenda: Lincoln County Emergency Management Agency Local Director's Meeting. January 21, 2021.
- **Appendix B**
  - Municipal Feedback Forms
- **Appendix C**
  - Public Survey for Local Hazard Mitigation Input
- **Appendix D**
  - 'Disease and Epidemic Plan.' Chapter within the Lincoln County Emergency Operations Plan
- **Appendix E**
  - Resolutions Adopted by Lincoln County and Municipalities
- **Appendix F – Flood Impact Analysis Report; Hurricane Impact Analysis Report; Earthquake Impact Analysis Report**
  - Northeast States Emergency Consortium (2019), Prepared for Lincoln County, Maine.

A. **Appendix A:** Copy of Agenda: Lincoln County Emergency Management Agency Local Director's Meeting. January 21, 2021

2021 Lincoln County Hazard Mitigation Plan Update Meeting. January 21, 2020

Presentation and Discussion from the Lincoln County Regional Planning Commission

The Lincoln County Regional Planning Commission and the Lincoln County Emergency Management Agency are updating the Lincoln County Hazard Mitigation Plan for 2021. We will need public + municipal input on the types of hazards, and the actions that can be taken to mitigate them. You are invited to give your professional input about your town in relation to natural disasters.

For any additional questions or thoughts on this subject, please contact Project Leads:

- Casey Stevens: cstevens@lincounty.me
- Emily Rabbe: erabbelcrpc.org
- Sandy Gilbreath: sandyg@lcrpc.org

This meeting is being recorded.

Attending:

- *See attendance log*

Materials:

- "2021 Hazard Mitigation Plan Survey"
- "Town mitigation actions"

Please let us know in advance if you would like a copy of the 2016 Lincoln County Hazard Mitigatic Plan!

Agenda:

Time (*tentative. Subject to change*)	Task	Who
6pm	Welcome + introductions	Everyone
6:30	Introduction of Hazard Mitigation Plan Update	Anne Fuchs - 15minutes (maybe more with Q&A)
7p.m.	Distribution + Discussion of Survey	LCRPC
7:20	Distribution + Discussion of Mitigation Projects	LCRPC
7:45	Review of Deadlines + Next Steps	LCRPC + EMA
8p.m.	EMA business	Casey - 30 mins **Note: Non-EMA directors may leave the meeting at this point*
8:30p.m.	Adjourn. Next Meeting 3/18	

B. **Appendix B:** Municipal Feedback Forms

Lincoln County Hazard Mitigation Plan Survey for Municipalities

The Lincoln County Regional Planning Commission (LCRPC) is updating the Hazard Mitigation Plan for the County 2021. We are asking for your participation in this plan update by providing answers to the below questions about your town.

The benefit of completing a Hazard Mitigation Plan is eligibility for FEMA Hazard Mitigation grants. For many communities, this can and has amounted to tens of thousands of dollars. With your assistance, the County can more effectively assess your municipality's requirements or needs, or determine the correct mitigation measures that will work for your community.

Thank you for taking the time to fill out this survey! You may be contacted with follow up questions and to approve the final 2021 Hazard Mitigation Plan.

Please return via:

- Email – Emily Rabbe: erabbe@lcrpc.org; Sandy Gilbreath: sandyg@lcrpc.org
- Snail mail: 297 Bath Road, Wiscasset, Maine 04578

If you have any questions, please contact us at the emails above, or contact Casey Stevens, Lincoln County EMA Director: cstevens@lincounty.me.

County-wide

Please list some potential actions the County could undertake to mitigate below natural disasters and meet the Hazard Mitigation goals. They can be:

- Local plans or regulations
- Structure/infrastructure projects
- Natural systems protection
- Education and awareness programs

Hazard Mitigation Goals	Potential County-wide Actions
Flooding Goal: Reduce potential damage, injury and loss of life in Lincoln County caused by flooding	
Winter and Summer Storms Goal: Reduce potential damage, injury and loss of life in Lincoln County caused by winter and summer storms	
Wildfires Goal: Reduce potential damage, injury and loss of life in Lincoln County caused by wildfires	
Drought Goal: Reduce potential damage, injury and loss of life in Lincoln County caused by drought	

Town-specific (*see accompanying document*)	
Town you're filling this survey out for, and your role in the community (professional title, or if resident): _____	
Hazard Mitigation Goals	
Flooding	**Please identify areas in your municipality that are susceptible to damages from flooding and/or have had repeated damages (such as road overtopping, culvert damages, coastal erosion, etc.).**
	Please list out possible specific actions for your town to undertake the susceptible areas to damage. Examples are: • Local plans or regulations • Structure/infrastructure projects • Natural systems protection • Education and awareness programs
Severe Winter Storms	**Please identify areas in your municipality that are susceptible to severe winter storms, such as ice jams, power outages, etc.**

	Please list out possible specific actions for your town to undertake the susceptible areas to damage. Examples are: • Local plans or regulations • Structure/infrastructure projects • Natural systems protection • Education and awareness programs
Severe Summer Storms	**Please identify areas in your municipality that are susceptible to severe summer storms, such as power outages, debris removal, etc.**
	Please list out possible specific actions for your town to undertake the susceptible areas to damage. Examples are: • Local plans or regulations • Structure/infrastructure projects • Natural systems protection • Education and awareness programs

Wildfires	**Please identify areas in your municipality that are susceptible to wildfires and subsequent property damages, such as home and vacation properties in the woods.**
	Please list out possible specific actions for your town to undertake the susceptible areas to damage. Examples are: • Local plans or regulations • Structure/infrastructure projects • Natural systems protection • Education and awareness programs
Drought	**Please identify areas in your municipality that are susceptible to drought, such as areas with prolonged shortages of water supply, and/or having effects on homeowners, crop or pastures losses, hydroelectric generators, and those with interests in the forest community.**

	Please list out possible specific actions for your town to undertake the susceptible areas to damage. Examples are: • Local plans or regulations • Structure/infrastructure projects • Natural systems protection • Education and awareness programs
Pandemic	**See "Pandemic Preparedness Plan"**

Vulnerable populations:
Please identify vulnerable populations in your municipality in regards to disaster response. For examples, dead-end roads where residents could be isolated; or where disabled individuals or older residents live.

Governance:
When does your Select Board, Board of Assessors, or other town leadership regularly meet?

Local Contact Information:
Please list the name, telephone number, email address and physical address of someone(s) in your community that can be contacted about hazard mitigation.

Hazard Mitigation Action Sheet: Southport Example

Lincoln County Hazard Mitigation Plan - 2021 Update

As part of the 2021 Hazard Mitigation Plan Update, municipalities are asked to provide specific actions that would mitigate hazards caused from natural disaster of Summer and Winter storms, wildfires, flooding, and drought. This information is being captured on the following charts. You may feel free to submit as much information as you'd like, and can share this chart with others in your town who would have input as well.

Directions for the following charts:

- Fill out the "Capabilities" chart for your town on page 2
- Find your town's "Mitigation Actions" chart, beginning on page 4
- Review the list of mitigations actions from the 2016 Hazard Mitigation Plan Update
- Please note in the chart if the hazards are still current, and whether or not they have been completed, and any changes to the information captured (coast, responsible agency, change in priority, etc.).
- On the blank chart following your town's list of actions, please submit any new actions to add to the 2021 Hazard Mitigation Plan update.

Please return via:

- Email – Emily Rabbe: erabbe@lcrpc.org; Sandy Gilbreath: sandyg@lcrpc.org; or Casey Stevens, cstevens@lincounty.me.
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Capabilities for Accomplishing Hazard Mitigation Chart

Town	Town Manager or Admin (y/n)	Staff involved in Local Planning (y/n)	Public Works or Road Commissioner (y/n)	EMA Director (y/n)	Flood Hazard Ordinance (y/n)	Shoreland Zoning Ordinance (y/n)	Form of Government (ST or LCPC)	Please list other Authorities, policies, programs, and/or resources available to accomplish hazard mitigation.
Alna								
Boothbay								
Boothbay Harbor								
Bremen								
Bristol								
Damariscotta								
Dresden								
Edgecomb								
Jefferson								
Monhegan Island Plt.								
Newcastle								
Nobleboro								
Somerville								
South Bristol								
Southport								
Waldoboro								
Westport Island								
Whitefield								
Wiscasset								

L

Capabilities for Accomplishing Hazard Mitigation Chart

Town	Town Manager or Admin (y/n)	Staff involved in Local Planning (y/n)	Public Works or Road Commissioner (y/n)	EMA Director (y/n)	Flood Hazard Ordinance (y/n)	Shoreland Zoning Ordinance (y/n)	Form of Government (ST or LCPC)	Please list other Authorities, policies, programs, and/or resources available to accomplish hazard mitigation.
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Bremen								
Bristol								
Damariscotta								
Dresden								
Edgecomb								
Jefferson								
Monhegan Island Plt.								
Newcastle								
Nobleboro								
Somerville								
South Bristol								
Southport								
Waldoboro								
Westport Island								
Whitefield								
Wiscasset								

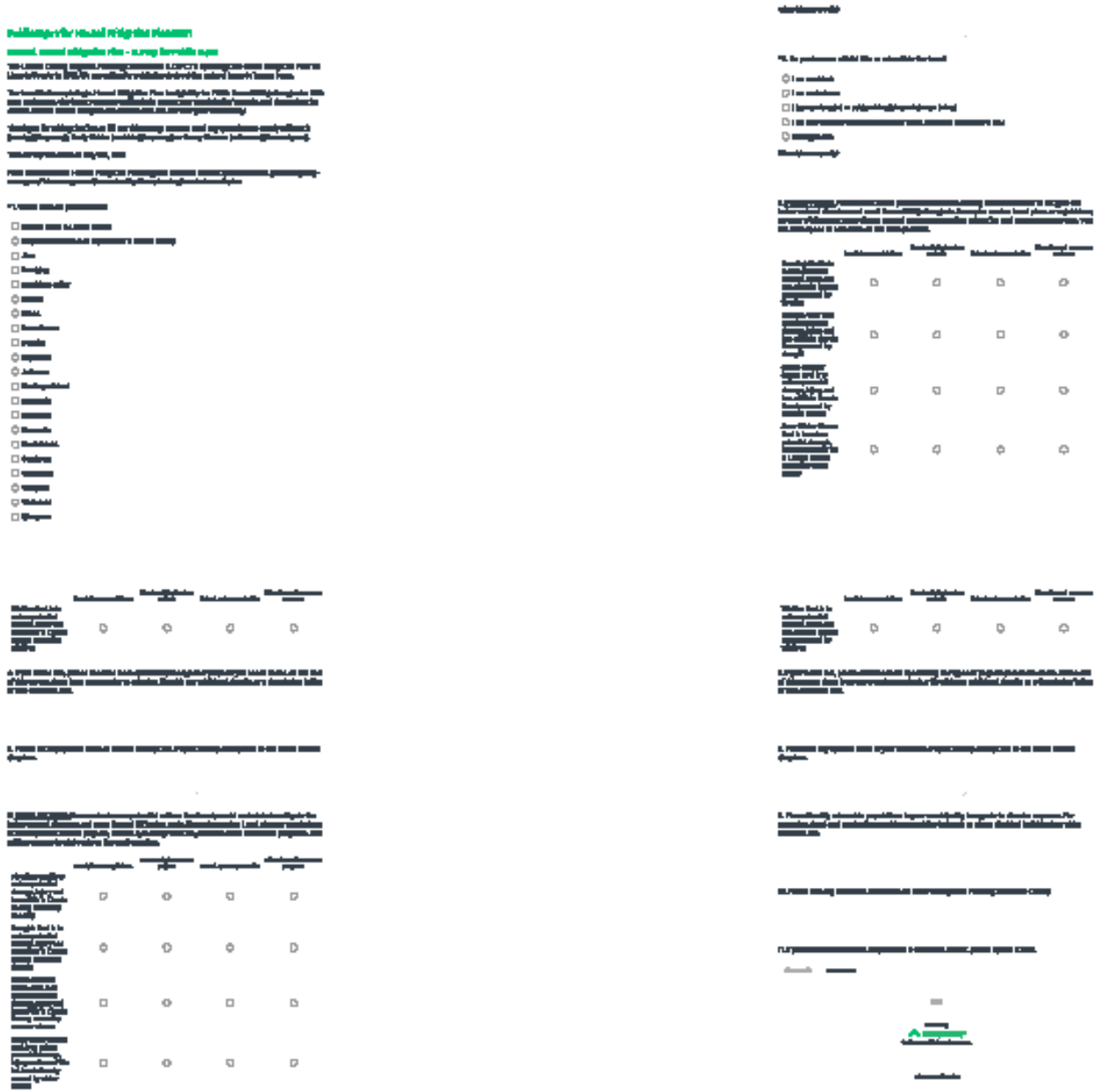
M

Town	Project (in order of priority)	Cost	Timeframe	Responsible Agency	Status
Southport	1) Campbell Rd; Upsize existing 15" x 50'cmp with 24" x 50' HDPE culvert and stabilize road shoulder 150' x 20' on average.	$12,000	Short Term	Road Commissioner	Deferred — lack of funds

Town	Project (in order of priority)	Cost	Timeframe	Responsible Agency	Status

N

Appendix C: Public Survey for Local Hazard Mitigation Input



P

- **Appendix D**
  - 'Disease and Epidemic Plan.' Chapter within the Lincoln County Emergency Operations Plan

APPENDIX 8 – DISEASE & EPIDEMICS

I. PURPOSE

The purpose of this Section is to describe responsibilities of county and municipal government and public organizations for a major outbreak of a disease or pandemic that causes severe harm or disruption to the municipalities with Lincoln County. It sets forth the actions to be taken in meeting needs and in requesting and implementing state and federal assistance, if required. It defines the efforts and resources to mitigate the effects of, prepare for, respond and recover from an emergency involving a disease outbreak.

Disease is the condition of an organism that impairs physiological functioning, resulting from causes such as infection, genetic defect or environmental stress. An epidemic is a widespread outbreak of an infectious disease where many people are infected at the same time. A Pandemic describes an epidemic of global proportions.

II SITUATION AND ASSUMPTIONS

A. SITUATION

1. An epidemic is not constrained by geography. Any location in the United States is susceptible and locations of those individuals shown to be infected could be in many different places simultaneously. Some factors that will determine the risk factor for individuals will be those exposed to the pathogen, the level and duration of the exposure, the sanitary conditions, and the health, cleanliness and biological resistance of the individual.

2. The Lincoln County EMA Director and/or County Commissioners will determine at what point during an epidemic the County EOC would be activated. Because an epidemic could last for several months, a sustained EOC activation too soon and for too long will reduce effectiveness of EOC staff.

3. Should the epidemic arrive in numbers in Lincoln County, the Lincoln County EMA Director will advise the County Commissioners, through the County Administrator, to request a formal State of Emergency be declared by the State Governor. This process will be forwarded through the Maine EMA (MEMA) Duty Officer.

4. The Lincoln County Commissioners shall prescribe a continuity of government plan for all essential County departments and personnel.

B. ASSUMPTIONS

1. Susceptibility to pandemic virus (influenza or other) would be universal. The US Dept of Health and Human Services (DHHS) has various models that range broadly from one another in the estimated number of illness, hospitalizations and mortality rates.

2. Risk groups for severe and fatal infection cannot be predicted with certainty but are likely to include infants, the elderly, pregnant women, and persons with chronic medical conditions.

3. Lincoln County, as a governmental body, does not have the authority to control, manage or assume responsibility for medical facilities, alternate care facilities or overflow facilities for hospitals and cannot assume responsibility for patient tracking.

4. Mass Care Shelters may not be appropriate as such facilities could promote disease transmission. Public gatherings during severe outbreaks should be discouraged to limit the transmission of disease. School officials, with advice from the Maine CDC and DOE will determine if schools shall be closed. This "*Social Distancing*" is a common step taken to minimize disease transmission rates.

5. If a widespread, easily transmittable virus infects people and spreads quickly in the United States, supplies of appropriate vaccines may initially be limited or non-existent. Drugs used to limit severity of infections (Tamiflu or Cipro for example) may quickly be exhausted or otherwise unavailable. Additionally, therapeutic agents may not be effective or available in sufficient quantities.

6. Because a pandemic outbreak will likely affect much of the country, public health mutual aid resources normally available from other counties, other states and the Federal government may be minimal or non-existent.

7. A severe pandemic outbreak will garner a huge share of media attention which will contribute to widespread public anxiety. Many in the general public may act irrationally out of fear and from lack of accurate information.

8. In a severe pandemic, absenteeism attributable to illness, care for ill family members and fear of infection may reach high levels during the peak weeks of an outbreak, with lower rates of absenteeism during weeks before and after the peak. School closings are likely to increase rates of absenteeism.

9. In an affected community, a pandemic outbreak will last about 6 to 8 weeks and can come in successive waves. This could have a major impact on the economy if rates of absenteeism are high.

10. The Maine CDC will be the lead state-level agency for dealing with severe disease and epidemic.

11. The "*Maine Responds*" Emergency Health Volunteer System database will generally be out of date.

III. CONCEPT OF OPERATIONS

A. PANDEMIC PHASES

The State of Maine Pandemic Influenza Plan identifies the following Pandemic Influenza Categories:

Table A8.1- State of Maine and WHO Pandemic Categories

Pre-pandemic (WHO* Phase 1,2)	No new influenza virus subtypes have been detected in humans. An influenza virus subtype that has caused human infection may be present in animals, or a circulating animal influenza poses a substantial risk of human disease.

LEVEL I (WHO Phase 3)	Human infection(s) with a new subtype, but no human-to-human spread, or at most rare instances of spread to a close contact.
LEVEL II (WHO Phase 4)	Small cluster(s) with limited human-to-human transmission but spread is highly localized, suggesting that the virus is not well adapted to humans.
LEVEL III (WHO Phase 5)	Larger cluster(s) but human-to-human spread still localized, suggesting that the virus is becoming increasingly better adapted to humans, but may not yet be fully transmissible.
LEVEL IV (WHO Phase 6)	Pandemic Phase: Increased and sustained transmission in the general population.
LEVEL V Post-Pandemic	Indices of influenza activity have returned to pre-pandemic levels.

* *World Health Organization*

B. SURVEILLANCE

1. Disease surveillance in Lincoln County will be performed as described in this subsection in accordance with the MECDC's regulation Chapter 258, Rules for the Control of Notifiable Conditions and using the MECDC "Notifiable Condition Reporting Form" or calling 1-800-821-5821 (24 hours a day) depending on a Category 1 or 2 reports.

2. All Health Care Providers and Facilities, Municipal Health Officer and Veterinarians are required to report. Pan Flu is considered a Category 2 report (form), however, reporting to the 24 hour telephone number is also encouraged.

3. Personal and privacy-protected information should not be released to municipal or county emergency managers, however, the number of sick, hospitalized and dead should be reported to local and county EOC's. EMA will contact Lincoln County Healthcare (LCHC) for this information when the Federal government announces Federal Response Stage 5 has been reached.

4. At Federal Response Stage 5, the County EMA will track the number of emergency room visits, number of hospital admissions, and number of known deaths from the disease outbreak. LCHC will provide the information on the Emergency Room (ER) visits and hospital admissions. Town offices will also provide information on deaths reported. This information will be passed to the State EOC.

The County EOC will track the following information in its electronic EOC status charts:

Information Type	Gather From
Number of Emergency Room Visits	LCHC
Number of Hospital Admissions	LCHC
Number of Deaths, by Age	LCHC and Municipal Town Clerks

C. PUBLIC EDUCATION & INFORMATION

1. The most effective measure that can be used by local emergency managers to combat a disease outbreak, epidemic or pandemic is public education and information. During a State of Maine Level I Pan Flu category, a public education and information program will be started by determining what information needs to be provided and making it available through the most efficient means possible.

2. When the State has declared a Level IV Pan Flu category, a major public education and information program will have been implemented by the State, county and municipal governments and non-governmental organizations.

3. All agencies within Lincoln County will coordinate their public information with the established Joint Information Center (JIC) in order to ensure that true, accurate and uniform information is being released. The public information should contain information on preventive measures and suggested medical care. Information on what is being done, on public gathering closures and on public vaccine distribution should also be released. This JIC may be a shared function between Lincoln County EMA and the State of Maine.

4. Acquiring and disseminating the most current and accurate information is vitally important for the public in order for residents to best prepare and weather a disease outbreak. Up to date Disease and Epidemic information may be found at the following websites:

Title	URL Address
Maine Prepares	http://www.maine.gov/mema/prepare/
Flu in Maine	http://www.maineflu.gov
PandemicFlu.gov	http://www.pandemicflu.gov
CDC Avian Influenza	http://www.cdc.gov/flu/avian/

D. COMMUNITY CONTAINMENT MEASURES - QUARANTINE

1. According to Maine state law: *if DHHS has reasonable grounds to believe that there exists, on public or private property, any communicable disease which presents a public health threat, a duly authorized agent of the Department may*

enter any place with the permission of the owner, agent or occupant where the communicable disease is reasonably believed to exist and may inspect and examine the same. If entry is refused, that agent shall apply for an inspection warrant from the District Court pursuant to Title 4, section 179,

prior to conducting the inspection. All agents of DHHS, municipal health officers, sheriffs, state and local law enforcement officers and other officials designated by the department shall enforce the quarantine rules of the Department.

2. Upon a DHHS submission of an affidavit showing by clear and convincing evidence that the person or property which is the subject of the petition requires immediate custody in order to avoid a clear and immediate public health threat, a judge of the District Court or
Justice of the Superior Court may grant temporary custody of the subject of the petition to the department and may order specific emergency care, treatment or evaluation.

3. Upon the declaration of an extreme public health emergency, DHHS may take a person into custody and order prescribed care of that person. DHHS may act without a court order if DHHS has reasonable cause to believe that the person has been exposed to or is at significant medical risk of transmitting a communicable disease that poses a serious and imminent risk to public health and safety.

4. In Lincoln County, the Sheriff's Office (SO) will be one agent which may be available for enforcement of DHHS quarantines. If so used, a corps of deputies will be trained and equipped with proper personal protective equipment (as determined by DHHS) and used to enforce court orders. Lincoln SO may, as appropriate, collaborate with municipal police departments and health officers to perform this task. The Maine State Police (MSP) and federal forces, including the military and Coast Guard may also enforce DHHS quarantines.

5. The County government will not request quarantines. County government in Maine has no public health authority. All responsibilities for determining the need for and requiring quarantines will be under the purview of DHHS.

E. COMMUNITY CONTROL MEASURES (HYGIENE AND SOCIAL DISTANCING)

1. Community-based control measures are designed to reduce the risk of influenza transmission by limiting the potential for social interactions (e.g., canceling public events, implementing community "snow days," etc.) and by implementing broad measures for the public to prevent inadvertent exposures (e.g., fever monitoring in public places, social distancing, use of masks, hand hygiene and respiratory etiquette).

2. The Lincoln County EMA will seek guidance from and coordinate with the MECDC before implementing community control measures to ensure that efforts by different counties are coordinated.

3. Important factors that will need to be considered in determining a threshold for community action include: numbers of cases and close contacts, number of cases per town, number of cases per week, characteristics of local disease transmission, types of exposure categories (travel-related, close contact, health care worker, unlinked transmission, etc.), morbidity and mortality rates, extent of community influx and efflux, and the availability of local health care and public health resources. The table on the following page illustrates some of the measures which can be enacted to reduce transmission of contagious disease.

Table A8.2 – Disease Spread Control Measures

Control Measure	**Measure Implementation Authority**
Promote proper hygiene to public	State of Maine JIC with MECDC
Close non-essential government functions and buildings	Municipal & County Elected Officers Local health officers
Cancel Public Events	Governor/MECDC Local Health Officers Event Organizers
Close educational institutions	Governor/MECDC School Superintendents/Principals/Directors Local health officers
Close businesses	Governor/MECDC Local health officers Business Owners

Lincoln County EMA will seek guidance from and coordinate with the MECDC through the State EOC before implementing the Community Control Measures to ensure that counties are not working against one another.

F. INFORMATION NETWORK

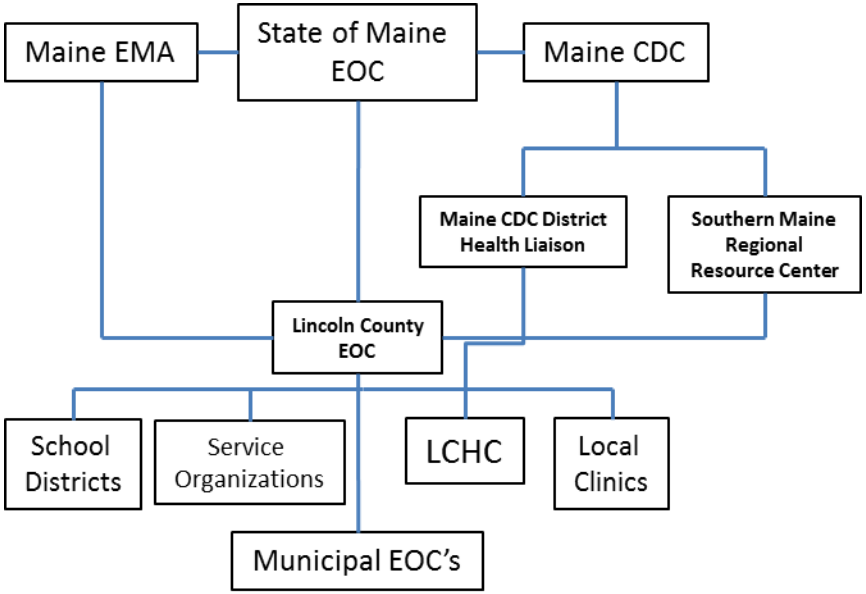
1. Acquiring and disseminating the most current and accurate information is vitally important in helping residents prepare for and weather a disease outbreak. The following table lists key sources of infectious disease and public health information. Some are publicly accessible and others have restricted access.

Table A8.3 – Information Network Sources

Information source	**Comments**
Maine Prepares http://www.maine.gov/mema/prepare/	General information on individual and business preparedness
Maine Flu Hotline Http://www.maineflu.gov 1-888-697-5846	Up-to-date information on flu issues and preventive measures for Maine
Flu.gov http://www.flu.gov http://cdc.gov/Disease Conditions/	Public Health advisories from the MECDC
Bird Disease Reporting Hotline 1-888-697-5846	Maine's hotline for reporting suspicious bird deaths
MEMA-WebEOC https://gateway.maine.gov/eoc7	WebEOC has status boards for both County EOCs and statewide hospitals and track incident status

2. An information network will be established during a major disease outbreak to ensure that all parties involved in mitigation, preparedness, response and recovery from an outbreak are provided adequate and accurate situational awareness. Coordination of information during a major disease requires an understanding of organizational relationships between entities. The following chart illustrates this network and relationships.

Figure A8.4 – Lines of Communication and Authority for response to disease and epidemics



G. LINES OF COMMUNICATION

1. There are many different levels to the public health system in Maine. The following paragraphs give a general idea of the lines of communication between government agencies and non-profit social service agencies within the State during a major disease outbreak.

2. MECDC directly oversees a local health officer in each municipality on a day-to-day basis, but it is doubtful that the CDC will have the staff to oversee those 490+ officers during a major disease outbreak. The municipal health officer may also work in the municipal EOC, which will coordinate with the County EOC.

3. MECDC has divided Maine in eight public health districts. Lincoln County is in **District 4** along with Waldo, Knox, and Sagadahoc counties. DHHS/MECDC staff of the Midcoast Public Health district includes: District Liaison, (5) Public Health Nurses, and (1) Infectious Disease Epidemiologist, (1) Office Administrator, (2) Eating & Lodging Inspectors, (1) Field Drinking Water Inspector. The District office is located at the DHHS Office at 91 Camden St. in Rockland. District 4 also works directly with the municipal

health officers and coordinates with the County EMA. MECDC has stated that it hopes to provide a liaison officer from the District Office to each county EOC during a major disease outbreak for which the county EOCs are activated.

4. MECDC maintains direct communications with all of the hospitals and clinics in the State. MECDC uses the Southern Maine Regional Resource Center (NMRRC) as a planning and logistics conduit to each hospital in Aroostook, Hancock, Lincoln, Penobscot, Piscataquis, Waldo, and Washington counties. Lincoln County EMA has a professional relationship with the NMRRC STAFF. During a major public health emergency, LCHC will provide a liaison to the Lincoln County EOC. This liaison will maintain contact with all of the clinics in the county.

IV. ORGANIZATION AND ASSIGNMENT OF RESPONSIBILITIES

This section lists the roles of County, municipal and State governments, the public school system, medical facilities and social services agencies with Lincoln County, and the American Red Cross (ARC) during an infectious disease outbreak.

A. COUNTY GOVERNMENT

1. Lincoln County Commissioners

- Order the closure of any and all County Facilities.
- Order non-essential County services to close.
- Direct non-essential County employees to work at the County EOC or to stay home.
- Direct the activation of and provide staffing for the County EOC.

2. Lincoln County Emergency Management Agency

- Host the Lincoln County Public Health Emergency Planning Team.
- Review the County EOP to update disease outbreak information.
- Develop Mutual Aid Agreements with other public and private agencies.
- To the greatest extent possible, coordinate all public education and information releases with partners prior to release.
- Provide public education and information updates to county and municipal officers and non-governmental organizations.
- Manage the County EOC.
- Coordinate resource requirements as needed.

- Develop schedules and processes to maintain staffing during an emergency.

3. Lincoln County Sherriff's Department

- Enforce mandatory quarantines.
- Secure County Facilities.
- Coordinate security augmentation requirements through the County EOC.
- Develop departmental procedures to maintain staffing during an emergency.

4. Lincoln County Communications Center

- Develop departmental procedures to maintain staffing during an emergency.
- Provide Disease Outbreak updates over the Public Safety radio system, as appropriate.
- Provide staff for the County EOC, as necessary.

B. MUNICIPAL GOVERNMENT

1. When a communicable disease threat is suspected, the local Health Officer, who represents MECDC and DHHS, will carry out the inspection and, if necessary, quarantine steps described in section III-D of this Appendix.

2. The Local Health Officer (LHO) shall assist in the reporting, prevention and suppression of diseases and conditions dangerous to health, and is subject to the supervision and direction of DHHS. The LHO shall receive and evaluate complaints made by any of the inhabitants concerning nuisances posing a potential public health threat within the limits of the health officer's jurisdiction. When the LHO has reasonable cause to suspect the presence of a communicable disease, the local health officer shall consult with the DHHS Commissioner, or a designee. The LHO shall then order the suppression and removal of nuisances and conditions posing a public health threat found to exist within the limits of the health officer's jurisdiction. For purposes of this section, "public health threat" means any condition or behavior that can reasonably be expected to place others at significant risk of exposure to infection with a communicable disease.

3. Not all municipalities within Lincoln County have a local Sexton for their cemeteries. Some cemeteries are private, some are run by an appointed board or an association and others do have Sextons. Each municipality has their own operating procedures, therefore Lincoln County will defer to the individual Town for burial procedures and records. However, each town will comply with any special instructions from MECDC regarding internment of human remains.

4. The Municipal Clerk will record all Burial Permits and Death Certificates. During an Epidemic or Pandemic, the Clerk shall notify the Municipal Officers, Local Health Officer and Local EMA Director of the names of those who have died with Influenza causes of death. This information shall also be forwarded to the Lincoln County EMA/EOC.

A. STATE GOVERNMENT

1. The Governor and DHHS have various degrees of authority to declare a public health emergency.

2. DHHS will investigate potential communicable disease outbreaks, adopt emergency rules to protect public health during a communicable disease emergency and arrange for temporary facilities for the care and treatment of infected persons.

3. MEMA will coordinate all emergency activities within the State. All public information will be coordinated through the State JIC. MEMA will also manage the use of WebEOC.

B. SCHOOL SYSTEM

1. The School Superintendent may close public schools in compliance with guidance from MECDC or for longer periods at his or her discretion, in order to prevent the spread of disease.

2. The School Nurse shall notify the School Superintendent and MECDC immediately if a number of children, administrators or faculty become sick with influenza-type symptoms.

E. MEDICAL

1. Lincoln County Healthcare

- Update the Hospital Emergency Plan to deal with management of hospital activities during a disease outbreak.
- Develop departmental procedures to maintain staffing during an emergency.
- Develop procedures for securing the Hospital during an outbreak.
- Coordinate all disease surveillance within the County.

- Provide status of hospital bed and ventilator availability, vaccine and anti-virals on hand, staff shortages, patients in quarantine and any outstanding shortfalls to the County EMA.

2. Private Practitioners

- Complete all medical certifications for the causes of death.
- Develop office procedures to maintain staffing during an emergency.
- Coordinate with the Lincoln County EMA/EOC on status of practice and clients.
- Manage and staff vaccinations at private clinics.
- Coordinate vaccinations with the MECDC and the Public Health district.

3. Southern Maine Regional Resource Center

- Coordination of healthcare emergency mitigation, preparedness, response, and recovery efforts with all key partners and agencies.
- Provide situational awareness in regard to the status of hospital bed and ventilator availability, vaccine and anti-virals on hand, staff shortages, patients in quarantine and any outstanding shortfalls for all hospitals in the Northeastern Maine Region.
- Provide education and training to hospitals, Federally Qualified Health Centers (FQHCs), and the community.
- Relay intelligence information to regional partners.

F. STATE OF MAINE

1. State Governor: The Governor has the authority to declare an extreme public health emergency.

2. Department of Health and Human Services (DHHS): DHHS may designate and classify communicable and occupational diseases; establish requirements for reporting and other surveillance methods for measuring the occurrence of communicable diseases, occupational diseases and the potential for epidemics; investigate cases, epidemics and occurrences of communicable and occupational diseases; and establish procedures for the control, detection, prevention and treatment of communicable and occupational diseases, including public immunization and contact notification programs. In the event of an actual or threatened epidemic or outbreak of a communicable or occupational disease, DHHS may declare that a

health emergency exists and may adopt emergency rules for the protection of the public health relating to: procedures for the isolation and placement of infected persons for purposes of care and treatment or infection control; procedures for the disinfection, seizure or destruction of contaminated property; and the establishment of temporary facilities for the care and treatment of infected persons which shall be subject to the supervision and regulations of DHHS.

a. DHHS will designate and classify communicable, environmental and occupational diseases; establish requirements for reporting and other surveillance methods for measuring the occurrence of communicable, occupational and environmental diseases and the potential for epidemics; investigate cases, epidemics and occurrences of communicable, environmental and occupational diseases; and establish procedures for the control, detection, prevention and treatment of communicable, environmental and occupational diseases, including public immunization and contact notification programs.

b. DHHS may establish procedures for agents of DHHS to use in the detection, contacting, education, counseling and treatment of individuals having or reasonably believed to have a communicable disease.

c. DHHS may designate facilities for the confinement and treatment of infected persons posing a public health threat. DHHS may designate any such facility in any hospital or other public or private institution, other than a jail or correctional facility. Designated institutions must have necessary clinic, hospital or confinement facilities as may be required by DHHS. DHHS may enter into arrangements for the conduct of these facilities with public officials or persons, associations or corporations in charge of or maintaining and operating these institutions.

3. The Maine Emergency Management Agency (MEMA) will activate the State EOC and coordinate all emergency activities within the State. Representatives from State Agencies will staff the State EOC and coordinate their activities. All public information will be coordinated through the State Joint Information System (JIS). MEMA will manage the use of the State WebEOC.

H. SOCIAL SERVICE AGENCIES

1. The Lincoln County EMA does not have the authority to collect private and personal information of people with special needs/disabilities but this information may be provided voluntarily. To promote information efficiency, Lincoln County EMA

will identify and establish contacts with local social service agencies that service this population. These agencies are listed in **ATTACHMENT ONE to this APPENDIX**.

2. Social Service agencies should strive to keep their client databases up to date and to coordinate with the Lincoln County EMA/EOC whenever there are client needs that cannot be met by their organizations and additional assistance is required.

I. AMERICAN RED CROSS

The ARC may be able to provide limited emergency food and medical supplies for individuals who are in quarantine and cannot leave their homes. The ARC will publish a phone number for people seeking assistance to call. The ARC should also coordinate with local municipal officers and/or general assistance officers to determine who needs assistance at home during an outbreak.

V. ADMINISTRATION AND LOGISTICS

A. ADMINISTRATION

1. The federal and state governments have established initial priorities for vaccine and anti-viral medication distribution during a major outbreak, epidemic or pandemic. These priorities are based on many factors including at-risk population, overall public health capability, efficacy and delivery methods of available vaccines and other factors. The priorities are subject to change.

2. Support Agreements: Agreements for mutual support and assistance have been signed in order to better utilize the resources that each agency has available. Support agreements relating to Disease and Epidemics include:

- 2006 LCHC & Lincoln County EMA
- 2006 American Red Cross & Maine EMA
- 2012 Maine EMA County Director Council MOU

B. LOGISTICS

1. Continuity of Operations (Work Force Support):

a. The medical effects of a disease outbreak will be compounded by its public impact. Communities will be forced to cope with and compensate for major disruption of their way of life due to interruption of essential services, termination of social gatherings and suspension of the normal pattern of life.

b. Services may need to be scaled back, due to the expected shortage of public safety workers and the increased demand on services related to the disease outbreak. Some departments, such as the Lincoln County SO and KRCC have part-time staff which may need to become full-time for the duration of the outbreak.

c. The staff of the Lincoln County EMA is small and there is no regular backup coverage. The staff will be in very high demand during an outbreak. Support or clerical staff from other County departments may be cross-trained to do some of the work in the EOC on a limited basis. Requests may be made to other County EMA offices and to the State EMA for manpower assistance during an outbreak.

d. Each municipality will need to develop plans or procedures for the continued staffing of volunteer fire departments and municipal EOCs. Volunteers with little or no training may be employed as necessary to meet priority threats.

e. The EMS service provided by several public, quasi-public or private agencies in Lincoln County may not be able to meet increased service demands. Use of retired, formerly licensed health care providers, Medical Reserve Corps or other acceptable resources may be authorized to meet demand. Relaxation of some licensing elements for this category of responders may be allowed by Maine EMS and the State of Maine under emergency rule.

2. Personnel Protective Equipment (PPE) for Disease Outbreaks:

a. Emergency responders, public health workers and health care workers should wear the PPE recommended by public health authorities. This table represents general PPE requirements which may be recommended during moderate diseases outbreaks:

Table A8.5 – General PPE Recommendations

Area to Protect	PPE Type	Duration Good For

Respiratory	N-95 (direct care) or Surgical Mask (community containment issues)	One short time use
Eyes	Plastic Goggles	Sanitize after each use
Hands	Vinyl, Nitrile or Latex gloves	One short time use
Hands	Hand Sanitizer	After each exposure

b. Each County and Municipal agency or department is responsible for acquiring its own PPE to safeguard their workers and volunteers.

1. Vaccine Distribution:

a. Should the need to distribute vaccines outside of the normal method (i.e., at medical facilities and doctor's offices), vaccine dispensing points may be established at appropriate locations. Materials may be provided through the Strategic National Stockpile (SNS). These Points of Dispensing (POD's) may include schools or other acceptable facilities and may be drive thru, walk up or take home.

b. Additional volunteers will be required to augment POD medical staff. The State of Maine maintains a database of vaccinators through the "***Maine Responds***" Emergency Health Volunteer System. These personnel are generally licensed EMS providers or others who have received special training and may be employed to assist with mass prophylaxis.

2. The table below describes Licensed Health and Medical Facilities located in Lincoln County along with their normal staffing strengths, Bed capacity and contact info.

Table A8.6 – Lincoln County Licensed Health Care Facilities with normal Staffing availability

Facility	**MD/DO/ PA' available**	**RNs/LPNs/ NP's available**	**CNAs/ CMAs available**	**Mental Health/Spiritual Care Staff**	**Phone #**
Lincoln County Healthcare(LCHC)					563-1234

Lincoln County Healthcare(LCHC) maintains the following resources:

Table A8.7 – LCHC Inpatient Capacity

Resource	Beds	ICU Beds	Ventilators	Staff
Available				
Surge				
Needed				
Short				

3. Large capacity Lincoln County Nursing Homes/Assisted Living Centers/Long Term Care Facilities are listed on ***Table A8.8*** on the following page. A complete listing of licensed facilities without support staff data may be found in ***Attachment 1 to Annex F: Mass Care***

Table A8.8 – Large licensed LTC facilities in Lincoln County

Facility	Licensed Beds	RNs/LPN's/ NP's	CNA' s/ CMA's	Phone #
Cove's Edge				
Chase Point				
St. Andrews Gregory Wing				

7. Funeral Homes offering mortuary services in Lincoln County:

Table A8.9- Funeral Homes in Lincoln County

Facility	Facility Contact #	Location	Human Remains: Temp holding capacity
Burbee, Carpenter & Hutchins	594-4212	110 Limerock St. Rockland	50

Laite Robert E Funeral	236-0092	9 Mountain St, Camden	5 (very limited)
Hall & Bibber Funeral Home	354-6475	78 Main Street, Thomaston	none

8. Biohazard Disposal- Biohazards will be disposed of by incineration at LCHC incinerator. LCHC owns and manages this resource and coordination will to be made with LCHC for its use.

9. Refrigeration of remains- Should a disease outbreak occur which causes many deaths; refrigeration of the deceased remains will be necessary. There is presently no large scale capacity to accomplish this in Lincoln County. Certain ice producers may be able to supply ice for temporary cooling and several refrigerated trucks may be available. Generally, this is a resource that will need to be coordinated through the State EOC.

VI. AUTHORITIES AND REFERENCES

A. AUTHORITIES

Title 4 MRSA Judiciary, Chapter 5 District Court MRSA
Title 22 § 153 MSRA Local Health Officers and §454 Duties
Title 22 § 250 MSRA Control of Notifiable Diseases and Conditions
Title 22 § 707 MSRA Deaths and Burials

B. REFERENCES

State of Maine Pandemic Influenza Plan
U.S. DHHS Pandemic Influenza Plan, dated Nov 2005
U.S. HSC National Strategy for Pandemic Influenza, dated May 2006
World Health Organization Global Influenza Preparedness Plan, dated 2009

ATTACHMENT ONE to APPENDIX 8
Lincoln County Social Service Agencies

ORGANIZATION	CONTACT #	REFERRAL TYPE

Home Counselors, Inc. Homeless Teen Project (includes Homeless Youth Outreach (*HYO*) and the Homeless Youth Shelter) (www.homecounselorsinc.org)	596-0359	Outreach - Youth who are homeless, runaway or locked out or at risk of homelessness, running away or being locked out under the age of 21. Shelter- Youth aged 10-18 without a place to stay.
Home Counselors, Inc. Home Based Family Services (www.homecounselorsinc.org)	596-0359	Families with a child under 18 either at risk of being placed outside the home or about to reenter the home.
Home Counselors, Inc. Community Intervention Project (www.homecounselorsinc.org)	563-6684	Families referred only by DHHS with an allegation of Child Abuse and Neglect.
Home Counselors, Inc. Supervised Visitation (www.homecounselorsinc.org)	621-0191	Families referred by DHHS or the Court with at least one child in the care of the State, for the purpose of arranging visitation between family members and the child.
MECDC, Public Health Nursing Office, Rockland www.mainepublichealth.gov	596-4278	Maternal/Child/Health Preventative Teaching Guidance with health concerns/Community Health Concerns/questions/medication & disease teaching/prefilled medications, flu clinic information for State & Public Health Concerns/client advocacy/connection with services.
Lincoln County Health Clinic www.Lincolnclinic.org	594-6996	low income, uninsured health care
Lincoln County Health Clinic, Prescription Assistance Coordinator www.Lincolnclinic.org	596-6994	Prescription assistance for low income maintenance

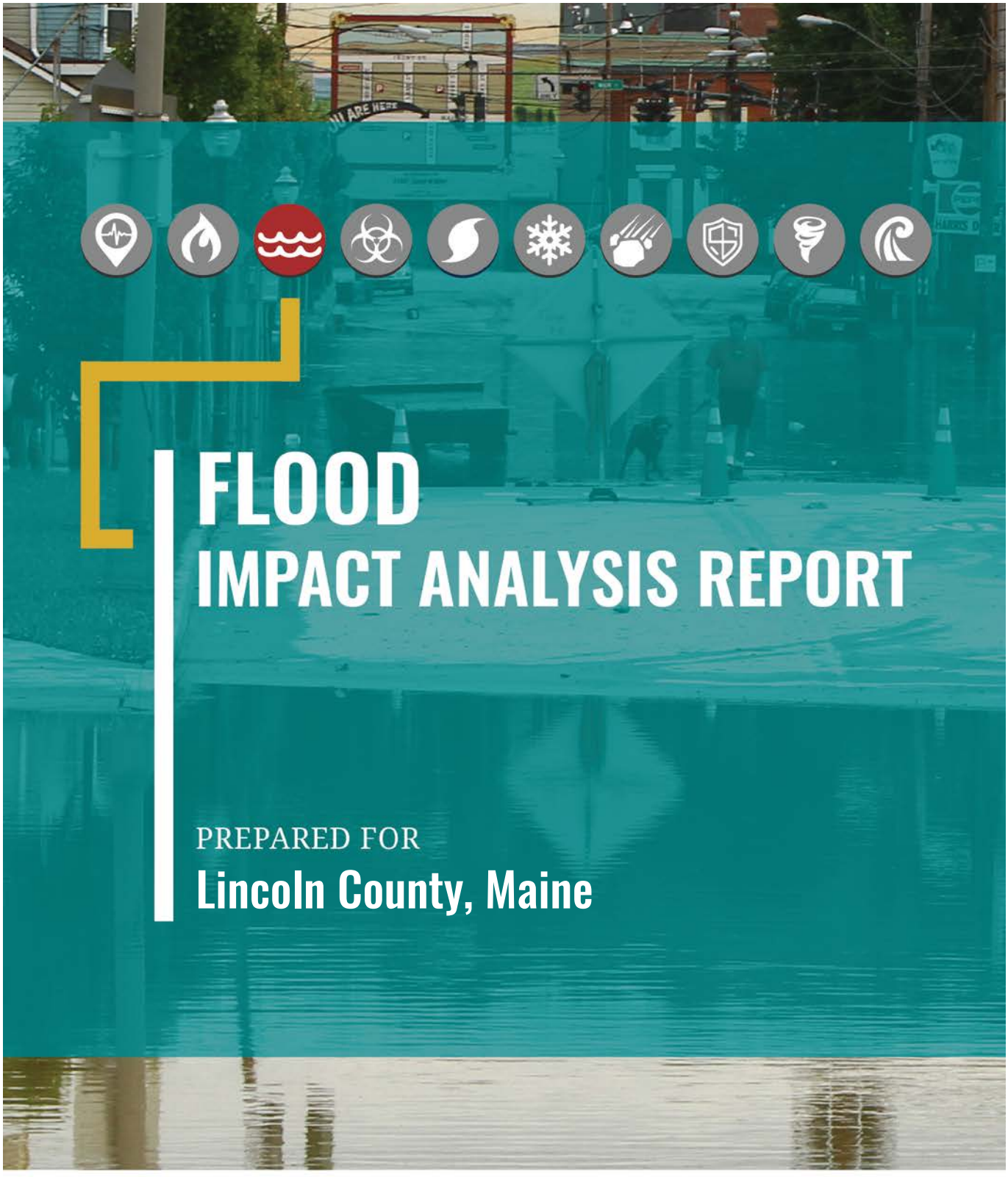
Kno-Wal Lin Homecare & Hospice www.penbayhealthcare.org/knowallin/ or wwwl.kno-wal-lin.org	594-9561	Visiting Nurses, Hospice Nurses, Physical Therapy, OCC Therapy, Speech Therapy, Personal Care Services, Homemaking, Telehealth, Healthwatch, Personal, Emergency Response Services, Social Worker, B/P Clinics, Foot Clinics, Flu Clinics and Private Duty Nursing.
Lincoln Center for Long Term Care www.penbayhealthcare.org/Lincolncenter/	594-6800	Space and resourcing subject to existing licensing requirements help out - not sure how"
American Red Cross Pine Tree Chapter www.pinetree.redcross.org	207-941-2903	Disaster Mental Health, medication, mental health counseling, blood, Health & Safety Training & Military Communications
Lincoln County Healthcare www.mainehealth.org/healthconnections http://www.mainehealth.org/mmhp	596-8000 594-6797 1-866-594-6797	Pandemic Information Pan Flu Hotline Pan Flu Toll Free Hotline
	594-6700	Penbay Healthcare Marketing & Communications (Public Relations)
	593-5566	Health Connections,
	593-5577	Occupational Health
	596-8315	Emergency Department
	596-8200	Community Health Resource
	701-4400	Mid-Coast Mental Health Center
	596-8720	Laboratory Services
	596-8490	Social Work Service
Lincoln County Home Energy Committee	594-2060	Energy assistance, home weatherization or repair, tax and rent refund programs, transportation and United States

		Department of Agriculture surplus food distribution.
Rockland District Nursing Assoc.	594-4522	
Camden District Nursing Assoc	230-6272	
Salvation Army www.servicingnewengland.use.salvationarmy.org/nne	596-6199	
Islands Community Medical Services	863-2565	Low income, uninsured, under insured prescription assistance & Telemedicine.
Anderson Inn @ Quarry Hill www.quarryhill.org	230-6100	
Penquis Community Action Program www.penquiscap.org	596-0361	

- **Appendix E**
    - Resolutions Adopted by Lincoln County and Municipalities

[Insert resolutions after receiving APA status from FEMA]

- **Appendix F – Flood Impact Analysis Report; Hurricane Impact Analysis Report; Earthquake Impact Analysis Report**
    - Northeast States Emergency Consortium (2019), Prepared for Lincoln County, Maine.



FLOOD
IMPACT ANALYSIS REPORT

PREPARED FOR

Lincoln County, Maine

THIS REPORT DEVELOPED BY

The Northeast States Emergency Consortium

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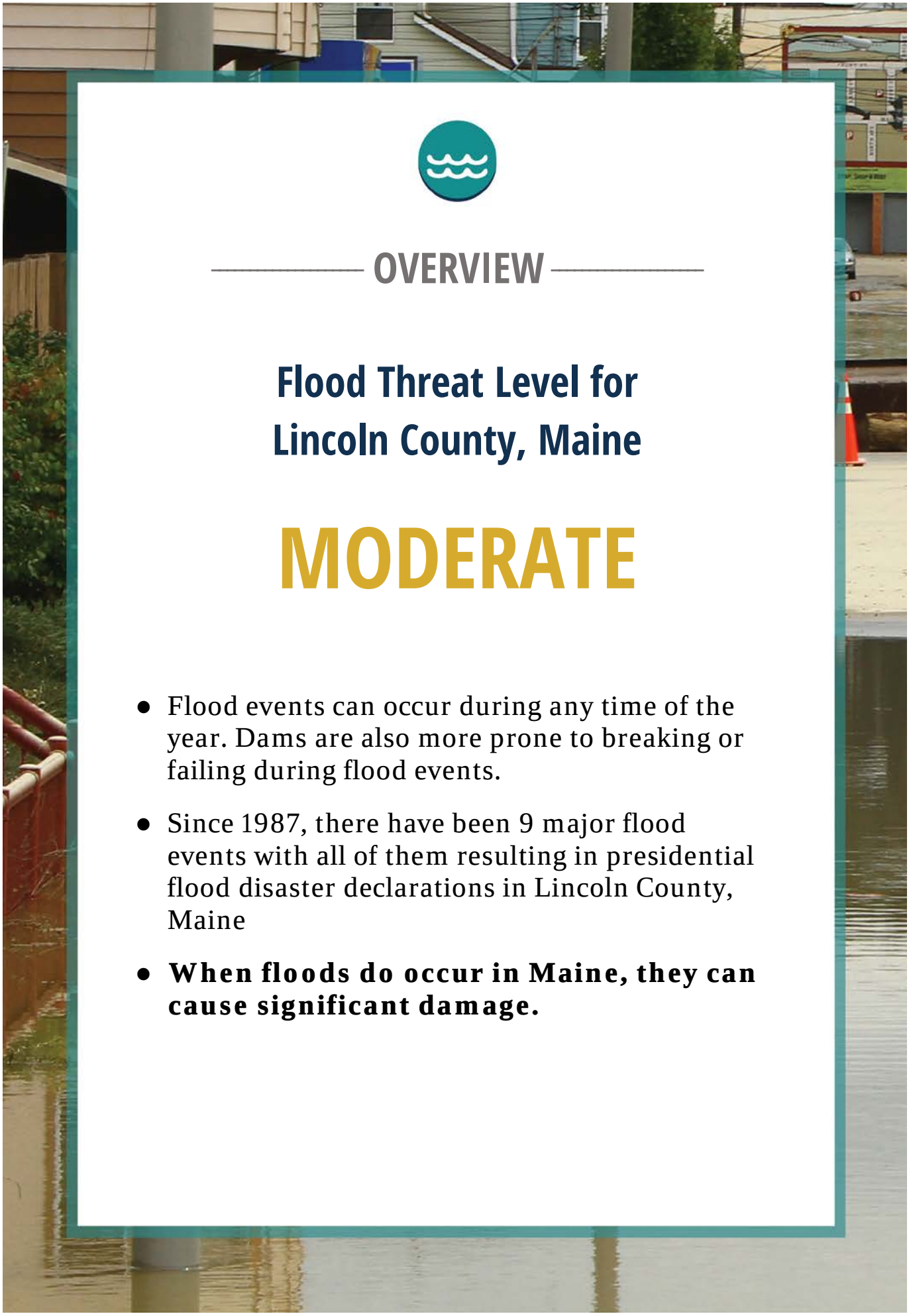
UTILIZING FEMA'S

HAZUS MH
EARTHQUAKE • WIND • FLOOD

PROGRAM



OVERVIEW

Flood Threat Level for Lincoln County, Maine

MODERATE

- Flood events can occur during any time of the year. Dams are also more prone to breaking or failing during flood events.
- Since 1987, there have been 9 major flood events with all of them resulting in presidential flood disaster declarations in Lincoln County, Maine
- **When floods do occur in Maine, they can cause significant damage.**

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I. INTRODUCTION

The first step in preparing for and mitigating any disaster is to estimate its potential impact on an area or region. The purpose of this study is to provide emergency managers and other government decision makers with an estimate of the potential impact of a moderate to large size flood affecting Lincoln County, Maine.

METHODOLOGY The methodology used to produce the results contained in this report is called HAZUS-MH (referred to as HAZUS) which was developed by the Federal Emergency Management Agency (FEMA) in cooperation with the National Institute of Building Sciences (NIBS). HAZUS uses Geographic Information System (GIS) software to calculate, map and display flood loss data. HAZUS uses mathematical formulas and information about building stock, digital elevation models (DEMs), potential floods, economic data and other information to estimate potential losses.

DATA COMPILATION This report utilizes default data contained in the HAZUS software compiled from available national databases. This data has been augmented using available state and county data. These default databases describe in general terms the building inventory and economic and social structure of Lincoln County, Maine. The default data provide a preliminary estimate of flood losses and impacts. More accurate estimates require detailed information about local hydrology, buildings, utilities and other specific information. This data is usually available from local and state agencies and departments and typically can be added to the HAZUS data base by local and state emergency personnel. In some cases, however, technical assistance from hydrologists, engineers and GIS experts may be required.

ESTIMATION It is imperative to point out that this HAZUS impact analysis is not a precise prediction, but rather a rough estimate of potential damage, human and economic impacts that may result from a future hypothetical flood affecting Lincoln County, Maine. While this estimate is based on current scientific and engineering knowledge, there are large uncertainties in the results, especially for essential facilities. Moreover, the study results are area-wide and tend to be less accurate for individual sites or facilities. More accurate site-specific results typically require detailed hydrologic studies and site-specific examinations beyond the scope and intent of HAZUS.

DISCLAIMER ***The estimates of social and economic impacts contained in this report are based on Hazus-MH Version 4.2 that utilizes 2010 census data and current scientific and engineering knowledge. There are uncertainties inherent in any loss estimation technique. Therefore, there may be significant differences between the modeled results contained in this report and the actual social and economic losses following a specific flood.***

II. EXECUTIVE SUMMARY OF IMPACT

The following is an Executive Summary of the estimated potential impact of a 500-year flood occurring on the major rivers of Lincoln County, Maine.

Estimated Direct Losses

Calculated by estimating the damage to buildings caused by the flood event.

General Building Stock	$15,262,000
Lifeline Utilities	$0
Total Direct Losses	$15,262,000

Essential Facilities

Calculated by estimating how many essential facilities were located in the flooded area as a result of this event.

Emergency Operations Centers (EOC's)	0
Police Stations	0
Fire Stations	0
Hospitals and Medical Care Facilities	0
Schools	0

Estimated Debris

Calculated by estimating the total amount of debris generated.

Generated (Tons)	1,294

Estimated Social Impact

By averaging probabilities, we have calculated how many individuals and households will be affected.

Displaced Households	51
People Requiring Shelter	0

III. THE FLOOD HISTORY OF LINCOLN COUNTY, MAINE

Both historically and in recent times, floods have occurred in Lincoln County, Maine. There have been 9 major flood events since 1987, with all of them resulting in presidential disaster declarations. There has not been a substantial flood event in Lincoln County since 2010. Floods are among the most costly and common natural hazard in Lincoln County and can be caused by dam failures, flash floods, ice jams, lake flooding, beaver dams, riverine runoff or urban runoff. Most of the flood damage in Lincoln County is triggered by runoff in the spring, when the snow pack melts too quickly for the watersheds to contain. Thus, the months between December and May are the ones most likely to experience flood events, with the most susceptible ones being January, March and April. Additionally, there are around 40 dams in Lincoln County consisting of mostly small to medium size, like the Meserve Dam in Jefferson. Of these, zero have High Hazard potential and 9 have Significant Hazard potential. The county contains three major rivers: The Damariscotta, Medomak, and Sheepscot. The Damariscotta starts from the outlet of Damariscotta Lake and runs through the south central part of the county. The Medomak runs through the eastern part of the county and empties into Muscongus Bay. The Sheepscot is the longest river running through Lincoln County, and passes through the county seat of Wiscasset in the western part. The communities that are the most flood-prone or have had repeated flood events are Bremen, Bristol, Edgecomb, Jefferson, Newcastle, Nobleboro, Somerville, South Bristol, Westport Island and Wiscasset.[1] Appendix A compares the frequency of flood events for all US counties and Appendix B shows US presidential flooding disaster declarations by county.

[1] Lincoln County Emergency Management Agency, *Lincoln County, ME Hazard Mitigation Plan*, 2016

The Study Flood

The scenario flood used for this study is based on the 500-year flood that occurs on all major rivers in Lincoln County, Maine. Figure 1 illustrates the location of the study flood event.

It is important to note that this event does not necessarily represent the greatest impact a flood could have on Lincoln County, Maine. Flood events can occur during any time of the year, from torrential summer rains, excessive spring rains combining with snowmelt runoff, to ice jams in the winter. Dams are also more prone to breaking or failing during flood events.

The Study Area

The area chosen for this study was Lincoln County, Maine with a land area of approximately 700 square miles and a 2010 US Census population of 34,457. The study area includes 9 census tracts which are the basic units of analysis for the HAZUS Methodology.

Figure 1 illustrates the location of the study region.

IV. DIRECT ECONOMIC IMPACT

General Building Stock

HAZUS estimates losses to the general building stock using default national inventories. This report was compiled based on HAZUS default data and has been augmented using available state and county data. Damage to the general building stock is not evaluated on a building by building basis. Rather, the methodology estimates losses based on the general character of the building stock (e.g. occupancy class, age, first floor elevation, foundation type and depth of flooding) in each census block. Damage estimates are then converted into dollar losses. The direct losses to the general building stock were estimated to be $15,262,000. HAZUS estimates the total value of the building stock exposure for Lincoln County, Maine to be $5,210,720,000. Therefore, these losses represent approximately 0.3 percent of the total value of the building stock. These total losses include direct building damage (structural, non-structural, contents and inventory) and income losses (relocation, income, wages and rental). Direct losses are $9,297,000 or 60.9 percent of the total losses with income losses of $5,965,000 accounting for the remaining 39.1 percent. Table 1 contains additional information on direct economic losses for buildings. Figure 2 maps Economic Losses to Buildings by census tracts.

Lifeline Utilities

The HAZUS methodology estimates losses for selected types of lifeline utilities. Lifeline utilities are vital to the function of a community or state. Damage to these systems can be devastating in terms of the health and safety of the citizens. There were no estimated direct losses to lifeline utilities facilities.

The direct losses and number of facilities located in the flooded area by type of utility were estimated to be as follows:

TYPE	LOSS	NUMBER OF FACILITIES IN FLOODED AREA
Waste Water	$0	0
Electric Power	$0	0
Water	*$N/A*	*N/A*
Oil	*$N/A*	*N/A*
Natural Gas	*$N/A*	*N/A*
Communications	$0	0

Facilities in italics have no HAZUS default data and therefore have no values for losses and functionality.

Table 2 contains additional information on direct economic losses for utilities. Figure 5 shows the location of utilities and essential facilities located in the flooded area.

Essential Facilities

The HAZUS methodology estimates losses for selected types of essential facilities. These include hospitals, police stations, fire stations, emergency operating centers and schools. Schools are included because of the critical role they often play as emergency shelters. Estimated losses to essential facilities are expressed in terms of their ability to function immediately following the flood. The number of essential facilities located in the flooded area was estimated as follows:

FACILITY	NUMBER OF FACILITIES IN FLOODED AREA
Emergency Operations Centers (EOC's)	0
Police Stations	0
Fire Stations	0
Hospitals and Medical Care Facilities	0
Schools	0

The HAZUS Flood Model only generates results for facilities situated within the flooded area. For Lincoln County, Maine, HAZUS estimated there would be no facilities in the flooded area.

HIGH POTENTIAL LOSS FACILITIES HAZUS defines high potential loss facilities as dams, levees, nuclear power plant facilities and military installations. High potential loss facilities tend to be unique and complex facilities that require in-depth analysis by structural and geotechnical engineers to assess their vulnerability to all types of hazards. For this reason HAZUS is limited to providing information about the location of the study area's high potential loss facilities. The default HAZUS database does not include any of these facilities.

Dams were imported into HAZUS using available state data. Figure 3 is a map of all dams in Lincoln County, Maine in relation to the major rivers of the county. This map can serve as a first step to identify which dams could be impacted by the scenario flood.

Direct Social Impact

DISPLACED HOUSEHOLDS AND SHELTERING NEEDS Floods can cause loss of habitability of buildings which contain housing units. Loss of habitability is calculated directly from damage to residential occupancy inventory and loss of electric power and water.

The HAZUS methodology estimates the number of displaced households and the number of those households expected to seek shelter based on the number of non-functioning or inhabitable units. HAZUS estimated that 51 displaced households would result in no people requiring emergency shelter. Individuals whose housing becomes uninhabitable will likely seek alternative shelter. Many will stay with friends and relatives. Others will stay in hotels. Some will stay in public shelters. In addition, observations from past disasters show that approximately 80% of the pre-disaster homeless population will seek public shelter in time of disaster.

Table 3 contains a summary of estimated displaced people and shelter needs.

Induced Physical Damage

HAZARDOUS SUBSTANCES HAZUS defines hazardous substances as chemicals, reagents, or substances which exhibit physical or health hazards, whether the materials are in a usable or waste state.

The default database was developed using the EPA Toxic Release Inventory (TRI) Database of hazardous material sites. The HAZUS default database contains only those substances that are considered highly toxic, flammable or explosive. In addition, it is limited to those facilities where large quantities are stored. Estimating flood losses related to the release of hazardous substances would require an in-depth analysis by hydrologists, geotechnical engineers, health physicists, and chemical experts to assess their vulnerability to floods. For this reason, HAZUS is limited to providing geographic information about the location of the study area's hazardous substances and estimated flood loss. There is one hazardous materials facility in the HAZUS default database for Lincoln County, Maine shown in relation to the 500-year flood in Figure 4.

DEBRIS HAZUS includes a model that estimates three types of debris caused by floods. The first type of debris is foundation debris, which is generally reinforced concrete and steel that tend to fall in large pieces. These large pieces of debris will need to be broken down into smaller pieces before they can be disposed of. It is likely that cranes and other heavy equipment would be required to remove this type of debris. It is estimated that 388 tons of foundation debris will be generated from the flood.

The other two types of debris are structural debris, which include brick, wood, and glass, and finish debris, which includes plaster walls, insulation, furniture, equipment and other

materials that are smaller in size and more easily removed with a bulldozer or handheld tools. It is estimated that the flood will generate 503 tons of structural debris and 403 tons of finish debris. The combined total debris is estimated to be 1,294 tons. This amount of debris would require an estimated 52 twenty-five ton truck loads to remove.

Table 4 contains a summary of the debris generated by the flood broken down by type of debris.

V. RECOMMENDATIONS/NEXT STEPS

This report was compiled based on HAZUS default data and has been augmented using available state and county data. This data provides a solid foundation for estimating losses but needs to be improved upon to yield more accurate results. A copy of the HAZUS default data can be found on the flash drive included with this report. We recommend that Lincoln County, Maine officials review and update their inventory data and resend it to NESEC. NESEC will rerun the HAZUS analysis with the updated inventory and provide an updated draft of this report.

VI. FIGURES, TABLES, AND APPENDICES

FIGURES

Figure 1: The Study Flood
Figure 2: Economic Losses to Buildings
Figure 3: Dams of Lincoln County, Maine
Figure 4: Hazardous Materials Facilities

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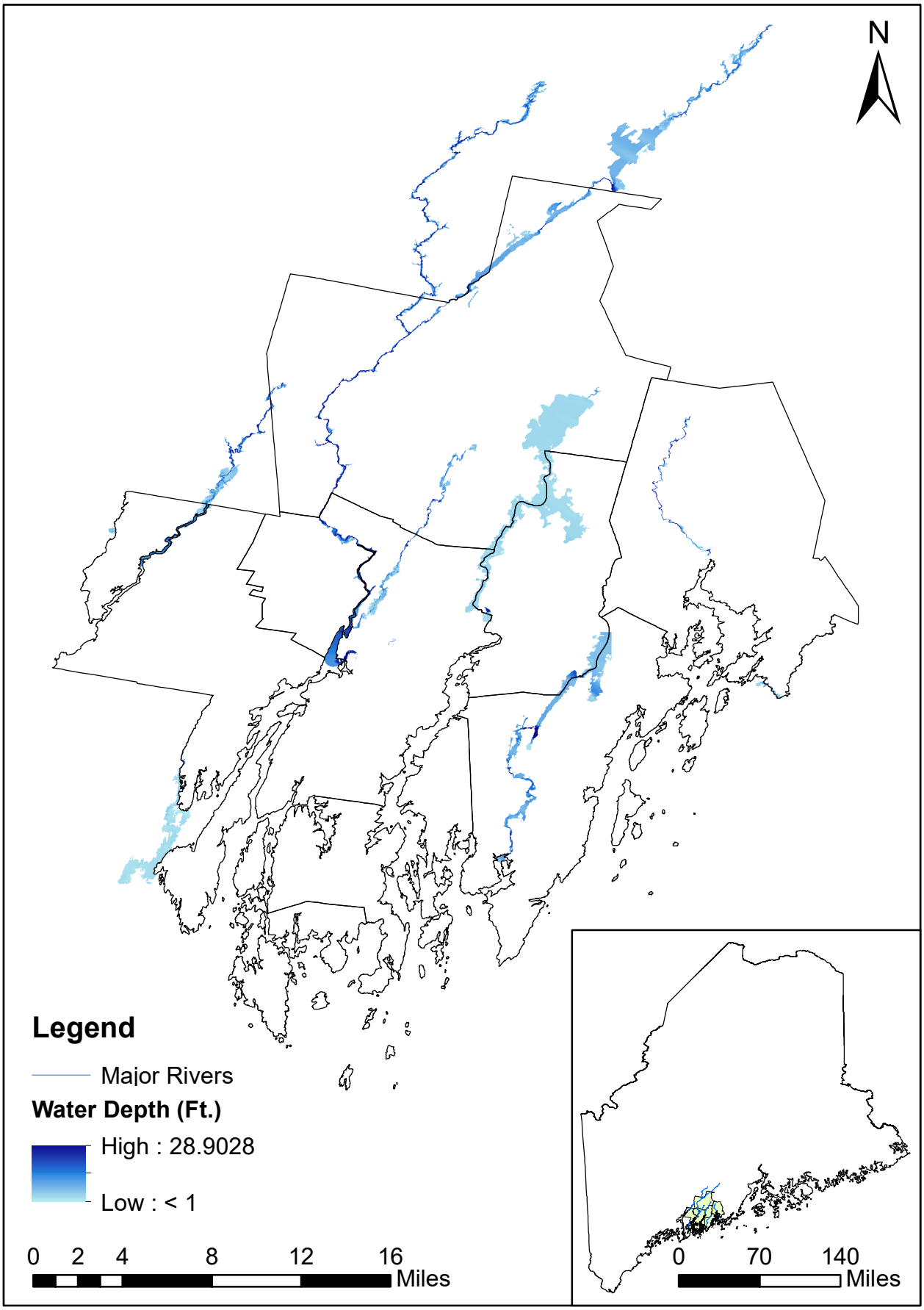
Table 2: Direct Economic Losses for Utilities
Table 3: Shelter Summary Report
Table 4: Debris Summary Report

APPENDICES

Appendix A: US Frequency of Flood Events by County
Appendix B: US Presidential Flooding Disaster Declarations by County

Figure 1

500-Year Flood Event
Lincoln County, Maine



Economic Losses for Buildings
500-Year Flood Event
Lincoln County, Maine

Figure 2

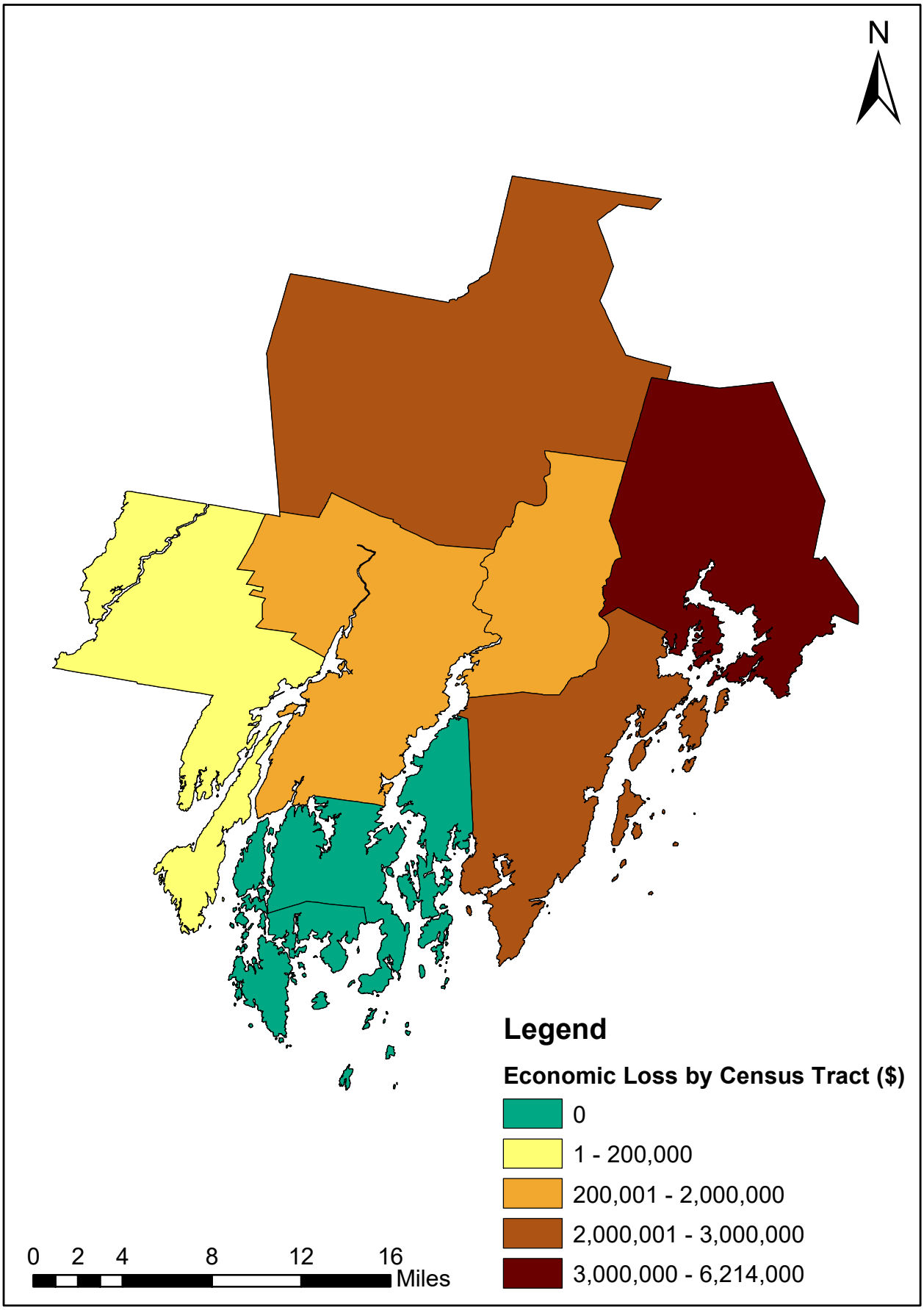
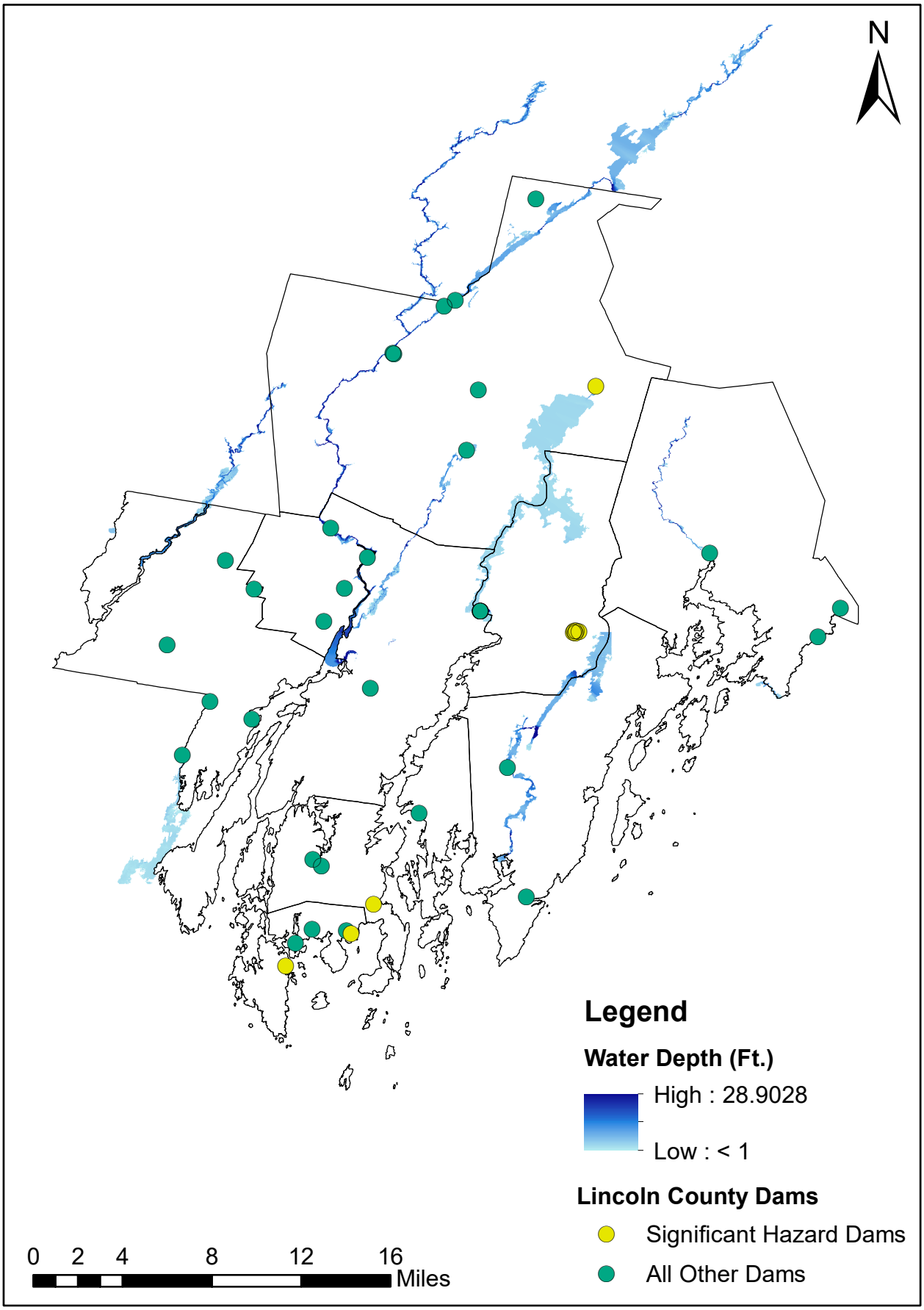


Figure 3

Dams of Lincoln County, Maine
500-Year Flood Event



Hazardous Materials Facilities
500-Year Flood Event
Lincoln County, Maine

Figure 4

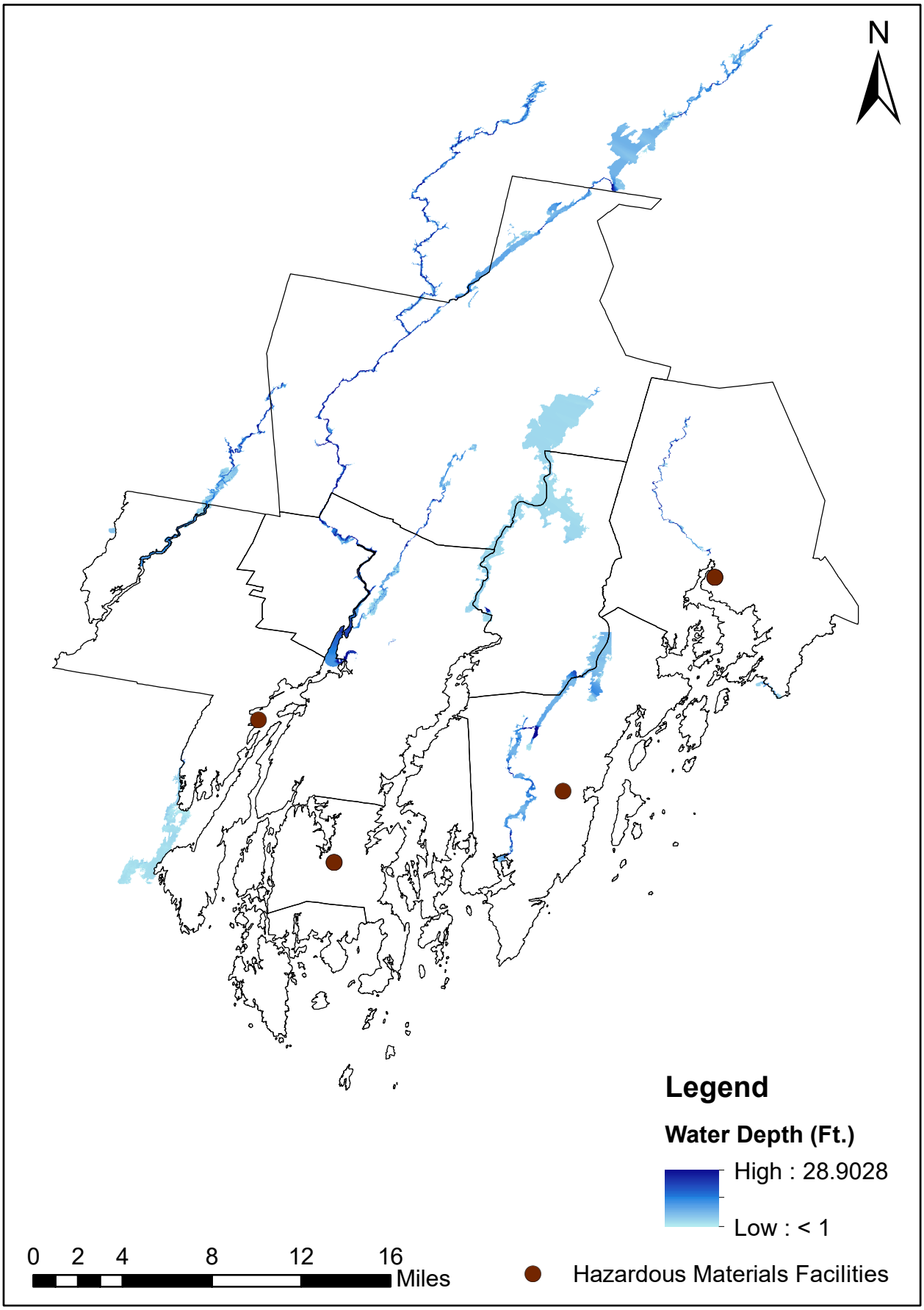


Table 1

Direct Economic Losses for Buildings

January 4, 2019

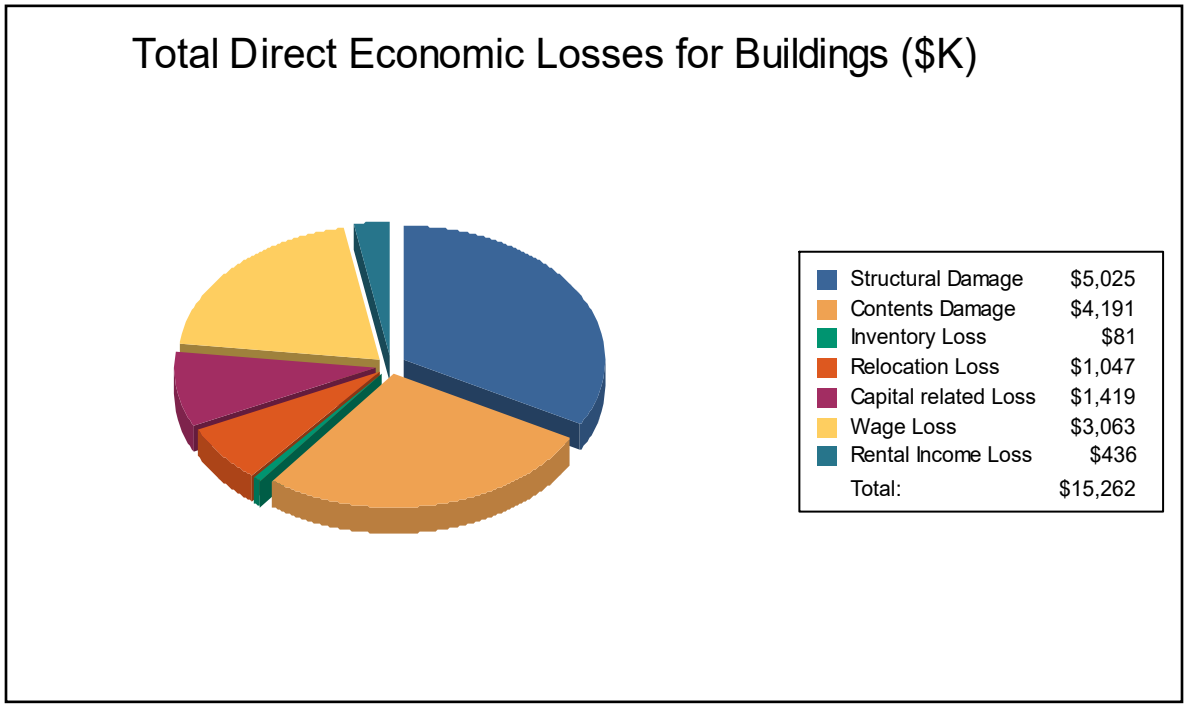
All values are in thousands of dollars

	Capital Stock Losses				Income Losses				
	Building Loss	Contents Loss	Inventory Loss	Building Loss Ratio %	Relocation Loss	Capital Related Loss	Wages Losses	Rental Income Loss	Total Loss
Maine									
Lincoln	5,025	4,191	81	0.80	1,047	1,419	3,063	436	15,262
Total	**5,025**	**4,191**	**81**	**0.80**	**1,047**	**1,419**	**3,063**	**436**	**15,262**
Scenario Total	**5,025**	**4,191**	**81**	**0.80**	**1,047**	**1,419**	**3,063**	**436**	**15,262**

Direct Economic Losses for Buildings

January 4, 2019

All values are in thousands of dollars

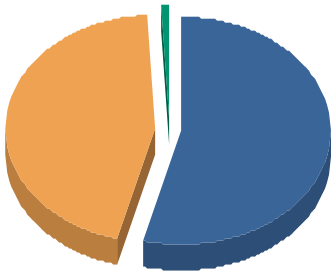


Direct Economic Losses for Buildings

January 4, 2019

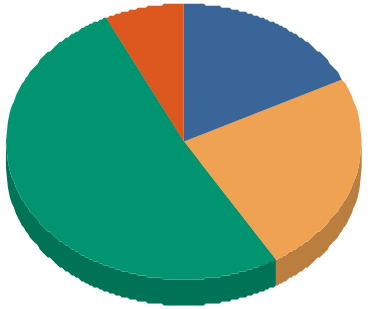
All values are in thousands of dollars

Loss by Capital Stock Categories ($K)



Structural Damage	$5,025
Contents Damage	$4,191
Inventory Loss	$81
Total:	$9,297

Income Losses by Categories ($K)



Relocation Loss	$1,047
Capital Related Loss	$1,419
Wage Loss	$3,063
Rental Income Loss	$436
Total:	$5,965

Totals only reflect data for those census tracts/blocks included in the user's study region and will reflect the entire county/state only if all of the census blocks for that county/state were selected at the time of study region creation.

Study Region: LincolnCty_EQ_FL
Scenario: 500_Year
Return Period: 500

Table 2

Direct Economic Losses for Utilities

January 4, 2019

All values are in thousands of dollars.

	Potable Water	Waste Water	Oil Systems	Natural Gas	Electric Power	Communication	Total
Maine							
Lincoln							
Facilities	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Pipelines	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Total	**$0.00**	**$0.00**	**$0.00**	**$0.00**	**$0.00**	**$0.00**	**$0.00**
Total	**$0.00**	**$0.00**	**$0.00**	**$0.00**	**$0.00**	**$0.00**	**$0.00**
Scenario Total	**$0.00**	**$0.00**	**$0.00**	**$0.00**	**$0.00**	**$0.00**	**$0.00**

Totals only reflect data for those census tracts/blocks included in the user's study region and will reflect the entire county/state only if all of the census blocks for that county/state were selected at the time of study region creation.

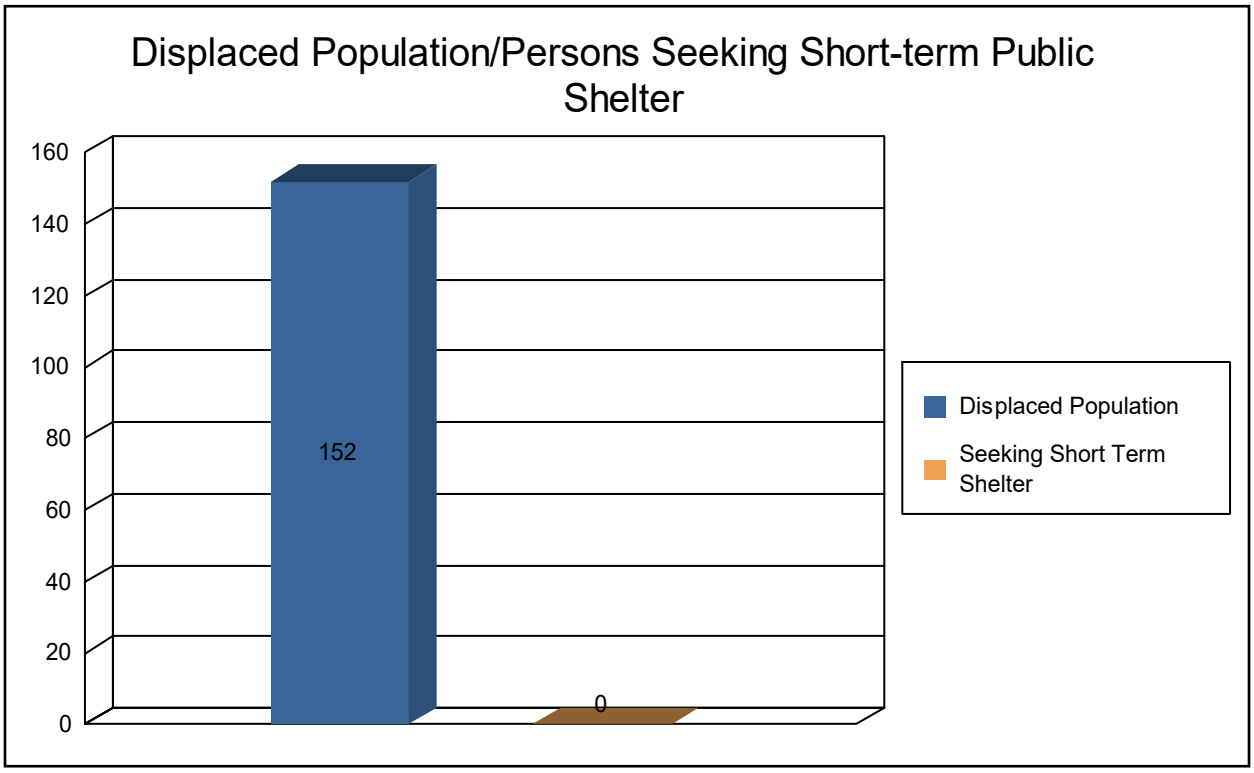
Study Region: LincolnCty_EQ_FL
Scenario: 500_Year
Return Period: 500

Table 3

Shelter Summary Report

January 4, 2019

	# of Displaced People	# of People Needing Short Term Shelter
Maine		
Lincoln	152	0
Total	**152**	**0**
Scenario Total	**152**	**0**



Totals only reflect data for those census tracts/blocks included in the user's study region and will reflect the entire county/state only if all of the census blocks for that county/state were selected at the time of study region creation.

Study Region: LincolnCty_EQ_FL
Scenario: 500_Year
Return Period: 500

Table 4

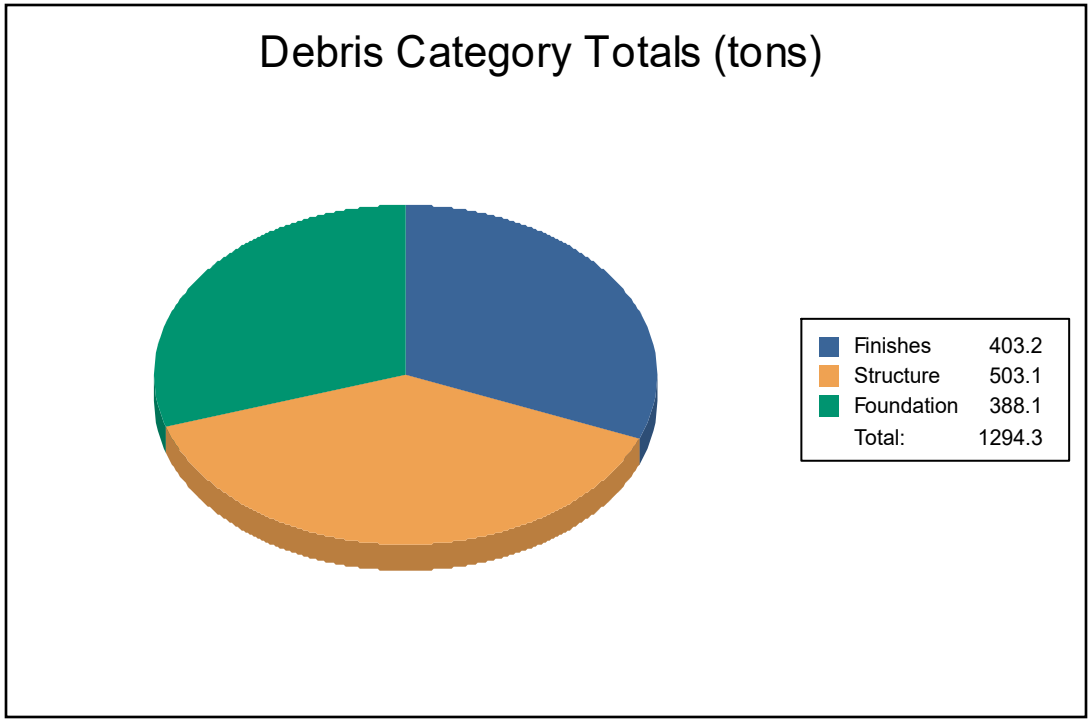
Debris Summary Report

January 4, 2019

All values are in tons.

	Finishes	Structures	Foundations	Total
Maine				
Lincoln	403	503	388	1,294
Total	**403**	**503**	**388**	**1,294**
Scenario Total	**403**	**503**	**388**	**1,294**

Debris Summary Report

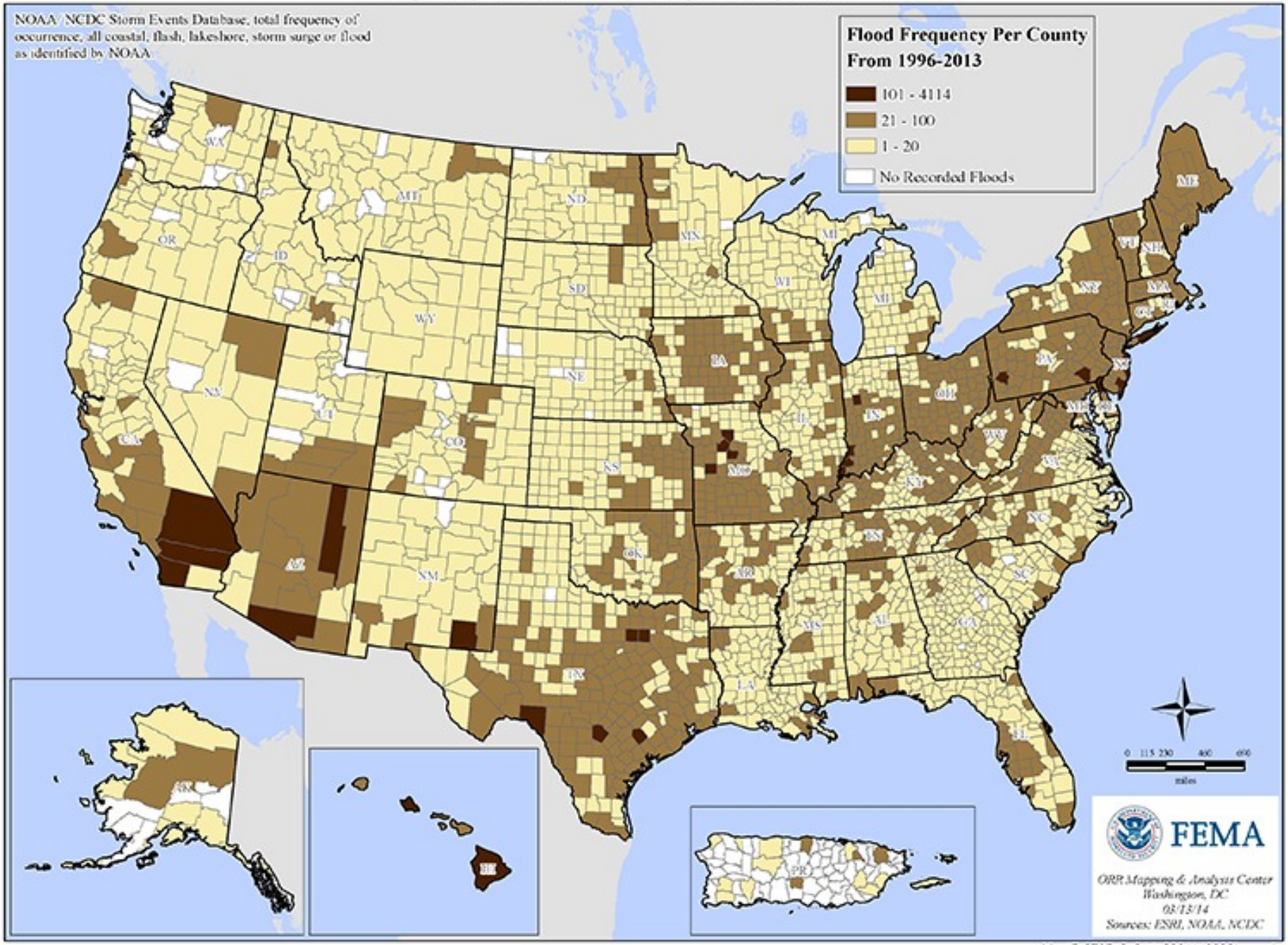


Totals only reflect data for those census tracts/blocks included in the user's study region and will reflect the entire county/state only if all of the census blocks for that county/state were selected at the time of study region creation.

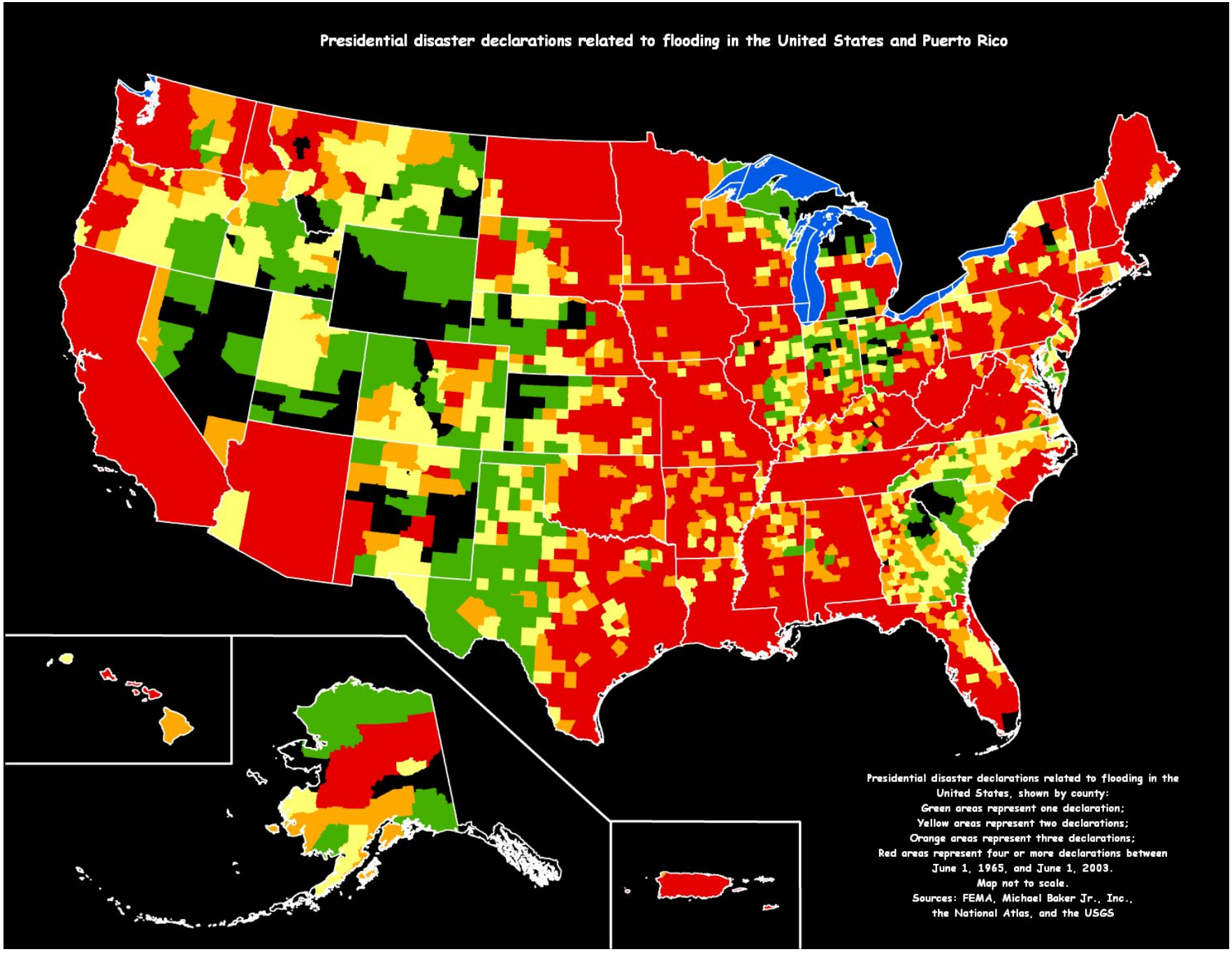
Study Region: LincolnCty_EQ_FL
Scenario: 500_Year
Return Period: 500

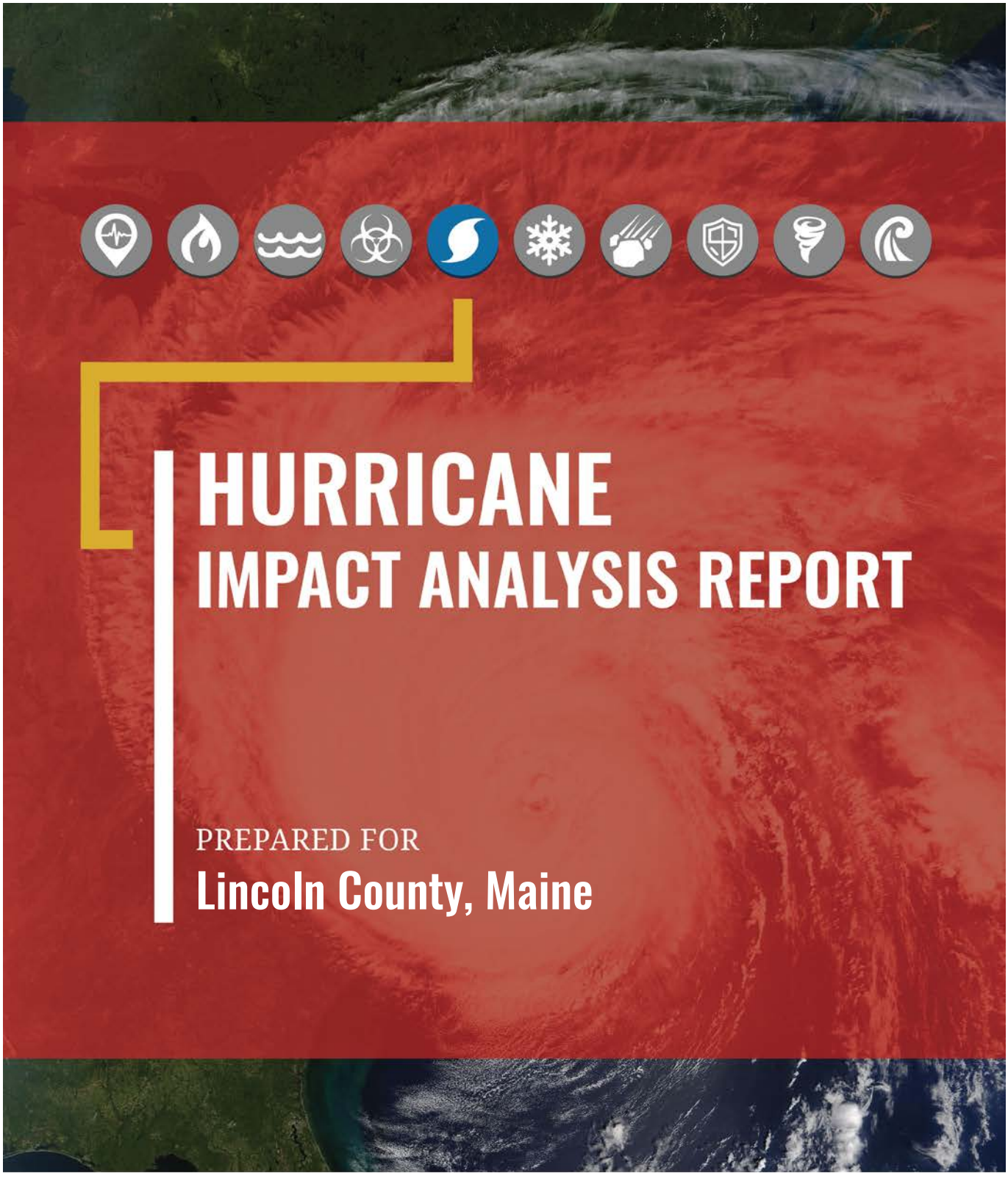
Appendix A

Frequency of Flood Events by County: 1996-2013



Appendix B


Presidential disaster declarations related to flooding in the United States and Puerto Rico
Presidential disaster declarations related to flooding in the United States, shown by county:
Green areas represent one declaration;
Yellow areas represent two declarations;
Orange areas represent three declarations;
Red areas represent four or more declarations between June 1, 1965, and June 1, 2003.
Map not to scale.
Sources: FEMA, Michael Baker Jr., Inc., the National Atlas, and the USGS



HURRICANE
IMPACT ANALYSIS REPORT

PREPARED FOR

Lincoln County, Maine

THIS REPORT DEVELOPED BY

The Northeast States Emergency Consortium

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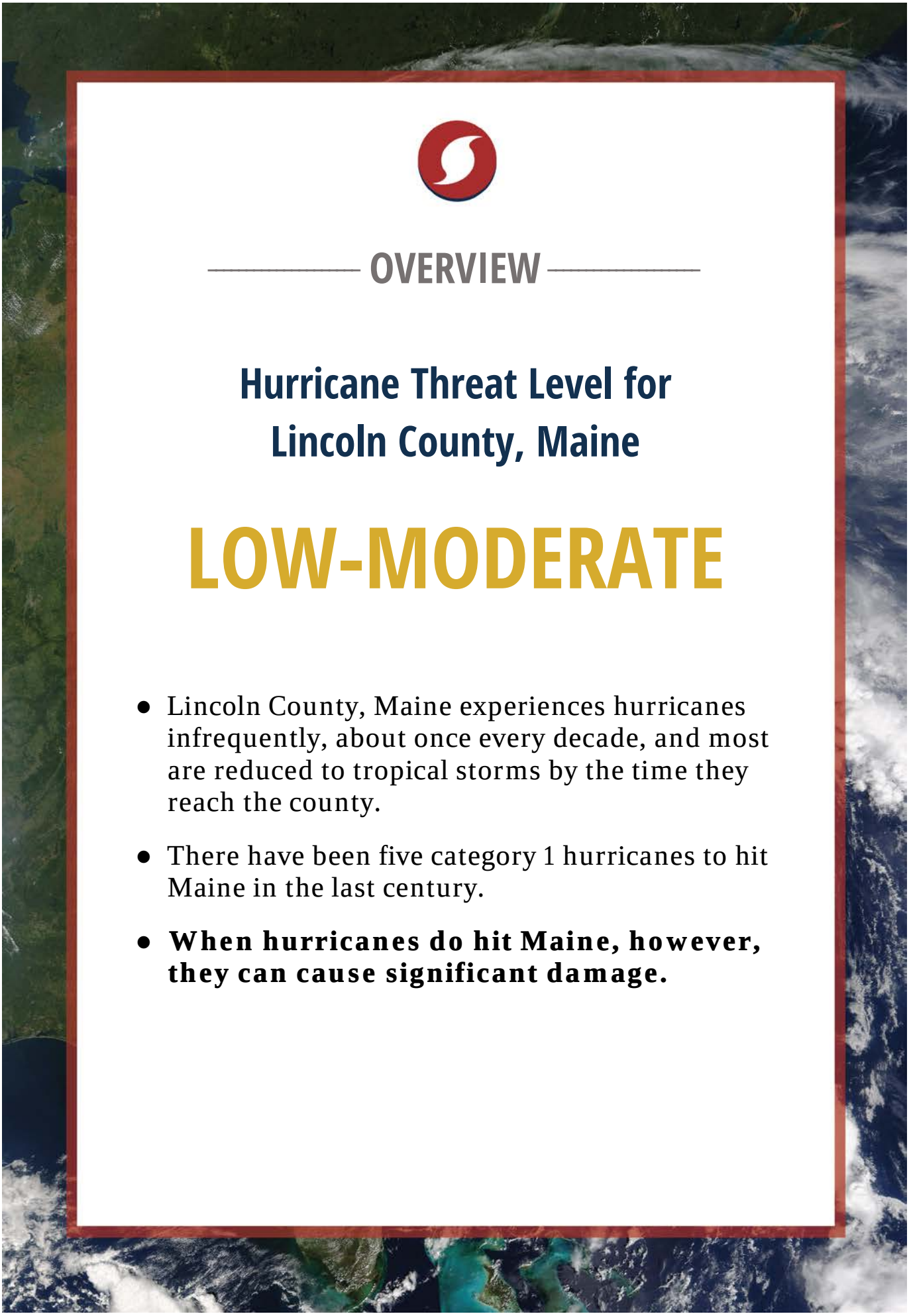
UTILIZING FEMA'S

HAZUS MH
EARTHQUAKE • WIND • FLOOD

PROGRAM



OVERVIEW

Hurricane Threat Level for Lincoln County, Maine

LOW-MODERATE

- Lincoln County, Maine experiences hurricanes infrequently, about once every decade, and most are reduced to tropical storms by the time they reach the county.
- There have been five category 1 hurricanes to hit Maine in the last century.
- **When hurricanes do hit Maine, however, they can cause significant damage.**

CONTENTS

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III. THE HURRICANE HISTORY OF LINCOLN COUNTY, MAINE 7

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- ESSENTIAL FACILITIES 8
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I. INTRODUCTION

The first step in preparing for and mitigating any disaster is to estimate its potential impact on an area or region. The purpose of this study is to provide emergency managers and other government decision makers with an estimate of the potential impact of a major hurricane affecting Lincoln County, Maine.

METHODOLOGY The methodology used to produce the results contained in this report is called HAZUS-MH (referred to as HAZUS) which was developed by the Federal Emergency Management Agency (FEMA) in cooperation with the National Institute of Building Sciences (NIBS). HAZUS uses Geographic Information System (GIS) software to calculate, map and display hurricane loss data. HAZUS uses mathematical formulas and information about building stock, demographics, sustained wind speeds and peak gusts, economic data and other information to estimate losses.

DATA COMPILATION This report utilizes default data contained in the HAZUS software compiled from available national databases. This data has been augmented using available state and county data. These default databases describe in general terms the building inventory and economic and social structure of Lincoln County, Maine. The default data provide a preliminary estimate of hurricane losses and impacts. More accurate estimates require detailed information about local buildings and other specific information. This data is usually available from local and state agencies and departments and typically can be added to the HAZUS data base by local and state emergency personnel. In some cases, however, technical assistance from engineers and GIS experts may be required.

ESTIMATION It is imperative to point out that this HAZUS impact analysis is not a precise prediction, but rather a rough estimate of potential damage, human and economic impacts that may result from a hypothetical hurricane affecting Lincoln County, Maine. While this estimate is based on current scientific and engineering knowledge, there are large uncertainties in the results, especially for essential facilities. Moreover, the study results are area-wide and tend to be less accurate for individual sites or facilities. More accurate site-specific results typically require meteorological and engineering analyses beyond the scope and intent of HAZUS.

***DISCLAIMER** The estimates of social and economic impacts contained in this report are based on HAZUS Version 4.2 that utilizes 2010 census data and current scientific and engineering knowledge. There are uncertainties inherent in any loss estimation technique. Therefore, there may be significant differences between the modeled results contained in this report and the actual social and economic losses following a specific hurricane. These results can be improved by using enhanced inventory and wind data.*

II. EXECUTIVE SUMMARY OF IMPACT

The following is an Executive Summary of the estimated potential impact of a major hurricane making landfall off the coast of Maine and affecting Lincoln County, Maine.

Estimated Direct Losses

Calculated by estimating the damage to buildings by combined wind and surge effects from the storm.

Combined Hurricane Wind and Surge General Building Stock	$924,453,000

Essential Facilities

By averaging probabilities, we have calculated how the functionality of essential facilities will be impacted immediately following the hurricane.

FACILITY	PROBABILITY OF FUNCTIONALITY (SURGE)	PROBABILITY OF FUNCTIONALITY (WIND)
Emergency Operations Centers (EOC's)	100%	100%
Police Stations	100%	100%
Fire Stations	100%	100%
Hospitals and Medical Care Facilities	100%	0%
Schools	100%	0%

Estimated Debris

Calculated by estimating the total amount of debris generated.

Hurricane Wind Debris Generated (Tons)	1,098,031
Hurricane Surge Debris Generated (Tons)	2,710
Total Debris Generated (Tons)	1,100,741

Estimated Social Impact

By averaging probabilities, we have calculated how many individuals and households will be affected.

Displaced Households for Hurricane Wind	586
Displaced Households for Hurricane Surge	42
Total Displaced Households	628

People Requiring Shelter for Hurricane Wind	282
People Requiring Shelter for Hurricane Surge	0
Total Number of People Requiring Shelter	282

III. THE HURRICANE HISTORY OF LINCOLN COUNTY, MAINE

The Northeast and Maine are susceptible to hurricanes, as demonstrated by past and recent events and coastal geographic location. One of the largest hurricanes to occur in the Northeast was the Great Hurricane of 1938 which caused substantial damage in Maine. Other significant storms that affected Maine include Hurricane Gloria in 1985, Hurricane Bob in 1991, Hurricane Floyd in 1999 and Hurricane Katrina in 2005. Since 1954, there have been five major hurricanes that have significantly impacted Lincoln County, Maine: Edna (1954), Carol (1954), Gloria, Bob and Floyd. Despite all five causing significant damage, since 1954 only Hurricane Edna has been the one to directly hit Lincoln County. Lincoln County is typically expected to receive one category 1 hurricane per decade. Most hurricane damage is done by heavy rains causing floods. Wind damage is usually limited to power outages and minor structural damage from tree limbs falling on power lines and buildings. All of Lincoln County is vulnerable to severe summer storms, which range from hurricanes and wind events to heavy rain events and lightning storms. Based on Lincoln County's location in the Northeast, it has the chance for at least one summer storm to occur per year. Although the greatest chance for hurricanes is during August and September, it is important to understand hurricanes can occur any time between June and October.[1] For additional information on the history and probability of hurricanes see Appendices B and C.

The Study Hurricane

The scenario used for this study is a hypothetical category 2 hurricane that makes landfall off the coast of Maine. Figure 1 illustrates the track of the hurricane. Figures 2 and 3 show the peak gust wind speeds and maximum sustained wind speeds by census tract. It is important to note that this event does not necessarily represent the greatest impact a hurricane could have on Lincoln County, Maine. Though the chances for a severe hurricane occurring in the Northeast are low to moderate, any hurricane that tracks along the East Coast has the potential to negatively impact Maine. For additional information on the hurricane scenario data see Appendix A.

The Study Area

The area chosen for this study was Lincoln County, Maine with a land area of approximately 700 square miles and a 2010 US Census population of 34,457. The study area includes 9 census tracts which are the basic units of analysis for the HAZUS Methodology.

Figure 1 illustrates the location of the study area.

[1] Lincoln County Emergency Management Agency, *Lincoln County, ME Hazard Mitigation Plan*, 2016

IV. DIRECT ECONOMIC IMPACT

General Building Stock and Combined Wind and Surge Loss

HAZUS estimates losses to the general building stock using default national inventories. This report was compiled based on HAZUS default data and has been augmented using available state and county data. Damage to the general building stock is not evaluated on a building by building basis. Rather, the methodology estimates losses based on the general character of the building stock (e.g. occupancy, age, height, floor area, foundation type and class) in each census tract. Damage estimates are then converted into dollar losses.

The objective of the combined wind and surge loss analysis is to estimate the total losses sustained by the general building stock of the region due to winds and storm surge generated by a single, user-specific hurricane scenario. The primary objective for the combined wind and surge loss is to avoid "double counting" in cases where the same building is exposed to both wind and surge hazards during a hurricane. Note that the HAZUS coastal surge analysis only applies to the general building stock. Figure 4 is a map of the hurricane surge event.

The combined wind and surge direct losses to the general building stock were estimated to be $924,453,000. HAZUS estimates the total value of the building stock exposure for Lincoln County, Maine to be $5,210,720,000. Therefore, these losses represent approximately 17.7 percent of the total building stock value.

Tables 1, 2, 3, 4, 5 and 6 contain additional information on building exposure, building damage for wind and surge, building loss for wind and surge, and combined direct economic losses respectively. Figure 5 is a map of combined direct economic losses for buildings by census tracts.

Essential Facilities

The HAZUS methodology estimates losses for selected types of essential facilities. These include hospitals, police stations, fire stations, emergency operating centers and schools. Schools are included because of the critical role they often play as emergency shelters. Estimated losses to essential facilities are expressed in the average probability of functionality of each facility as a whole following the hurricane. HAZUS generally estimates that emergency operations centers, police stations and fire stations will be operating during an emergency, unless they are completely nonfunctional. The estimated probability of functionality for essential facilities for hurricane wind was estimated as follows:

FACILITY	PROBABILITY OF FUNCTIONALITY
Emergency Operations Centers (EOC's)	100%
Police Stations	100%
Fire Stations	100%
Hospitals and Medical Care Facilities	0%
Schools	0%

Tables 7, 8, 9, 10 and 11 contain additional information about the functionality for hospitals, schools, emergency operations centers, police stations and fire stations respectively for hurricane wind. Tables for essential facilities for hurricane surge are not included because the HAZUS Surge Model only generates results for facilities situated in the surge zone. All the essential facilities are not situated in the surge zone and are at 100% functionality, and therefore have no results displayed in their tables.

Direct Social Impact

DISPLACED HOUSEHOLDS AND SHELTERING NEEDS The HAZUS methodology estimates the number of displaced households and the number of those households expected to seek shelter based on the number of non-functioning or inhabitable units. For hurricane wind, it is estimated that 586 displaced households would result in 282 people requiring emergency shelter. For hurricane surge, HAZUS estimated that 42 displaced households would result in no people requiring emergency shelter. Individuals whose housing becomes uninhabitable will likely seek alternative shelter. Many will stay with friends and relatives. Others will stay in hotels. Some will stay in public shelters. In addition, observations from past disasters show that approximately 80% of the pre-disaster homeless population will seek public shelter in time of disaster.

Tables 12 and 13 contain summaries of estimated displaced households and shelter needs for hurricane wind and surge.

Induced Physical Damage

DEBRIS HAZUS includes multiple debris models that estimate results differently for each type of hazard. There are three types of debris caused by hurricane wind and three different types of debris caused by hurricane surge.

HURRICANE WIND DEBRIS The first type of debris for hurricane wind is reinforced concrete and steel. This type of debris is unlikely to contribute significantly to the debris total, as steel and concrete are generally unaffected by wind alone. If foundations and building frames are impacted, it is likely that cranes and other heavy equipment would be required to remove this type of debris. It is estimated that 807 tons of reinforced concrete and steel debris will be generated from this hurricane.

The second type of debris include brick, wood, glass, furniture, equipment, plaster walls and other materials that are smaller in size and more easily prone to being blown away or becoming hazardous projectiles. This type of debris will likely need to be removed with a bulldozer or smaller machines and tools. It is estimated that the hurricane will generate 75,182 tons of brick, wood, glass and other small pieces of debris.

The third type of debris is tree debris. Trees can easily be blown down during hurricanes, scattering large amounts of trunks, branches and limbs on public right of ways and residential properties. It is likely that specialized crews and machinery will be required to remove and dispose this type of debris. It is estimated that 1,022,042 tons of tree debris will be generated from hurricane winds.

Figure 6 is a map of the total tree debris broken down by census tract. Table 14 contains a summary of the debris generated by hurricane wind broken down by type.

HURRICANE SURGE DEBRIS For surge, the first type of debris is foundation debris, which is generally reinforced concrete and steel that tend to fall in large pieces. These large pieces of debris will need to be broken down into smaller pieces before they can be disposed of. It is likely that cranes and other heavy equipment would be required to remove this type of debris. It is estimated that 645 tons of foundation debris will be generated from the surge.

The other two types of debris are structural debris, which include brick, wood, and glass, and finish debris. Finish debris includes plaster walls, insulation, furniture, equipment and other materials that are smaller in size and can be more easily removed with a bulldozer or hand held tools. It is estimated that the surge will generate 967 tons of structural debris and 1,032 tons of finish debris. The total debris for surge is estimated to be 2,710 tons.

Table 15 contains a summary of the debris generated by hurricane surge broken down by type.

The total combined hurricane wind and surge debris is estimated to be 1,100,741 tons. This amount of debris would require an estimated 44,030 twenty-five ton truck loads to remove.

V. RECOMMENDATIONS/NEXT STEPS

This report was compiled based on HAZUS default data and has been augmented using available state and county data. This data provides a solid foundation for estimating losses but needs to be improved upon to yield more accurate results. A copy of the HAZUS default data can be found on the flash drive included with this report. We recommend that Lincoln County, Maine officials review and update their inventory data and resend it to NESEC. NESEC will rerun the HAZUS analysis with the updated inventory and provide an updated draft of this report.

VI. FIGURES, TABLES, AND APPENDICES

FIGURES

Figure 1: Hurricane Scenario Event
Figure 2: Peak Gust Wind Speeds
Figure 3: Maximum Sustained Wind Speeds
Figure 4: Hurricane Surge Inundation
Figure 5: Combined Wind and Surge Direct Economic Losses for Buildings
Figure 6: Estimated Tree Debris

TABLES

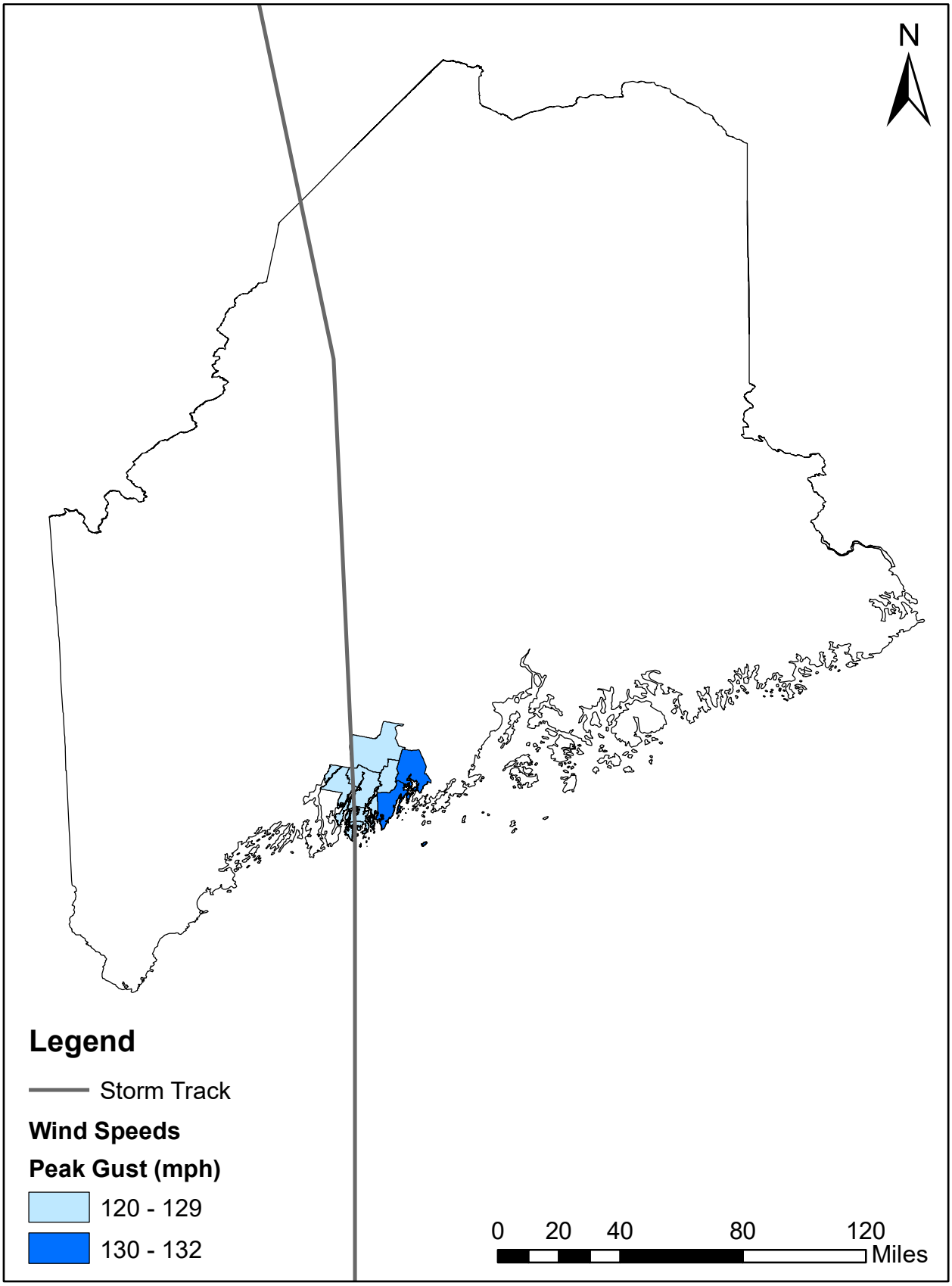
Table 1: Building Exposure by Occupancy Type
Table 2: Expected Building Damage by Occupancy for Hurricane Wind
Table 3: Expected Building Damage by Occupancy for Hurricane Surge
Table 4: Total Building Loss by Occupancy for Hurricane Wind
Table 5: Total Building Loss by Occupancy for Hurricane Surge
Table 6: Combined Wind and Surge Direct Economic Losses for Buildings
Table 7: Hospital Functionality
Table 8: School Functionality
Table 9: Emergency Operations Center (EOC) Functionality
Table 10: Police Station Functionality
Table 11: Fire Station Functionality
Table 12: Hurricane Wind Shelter Report
Table 13: Hurricane Surge Shelter Report
Table 14: Hurricane Wind Debris Summary Report
Table 15: Hurricane Surge Debris Summary Report

APPENDICES

Appendix A: Hurricane Scenario Data
Appendix B: Hurricane Return Periods for Coastal US Counties
Appendix C: Tropical Cyclone Tracks 1851 - 2015

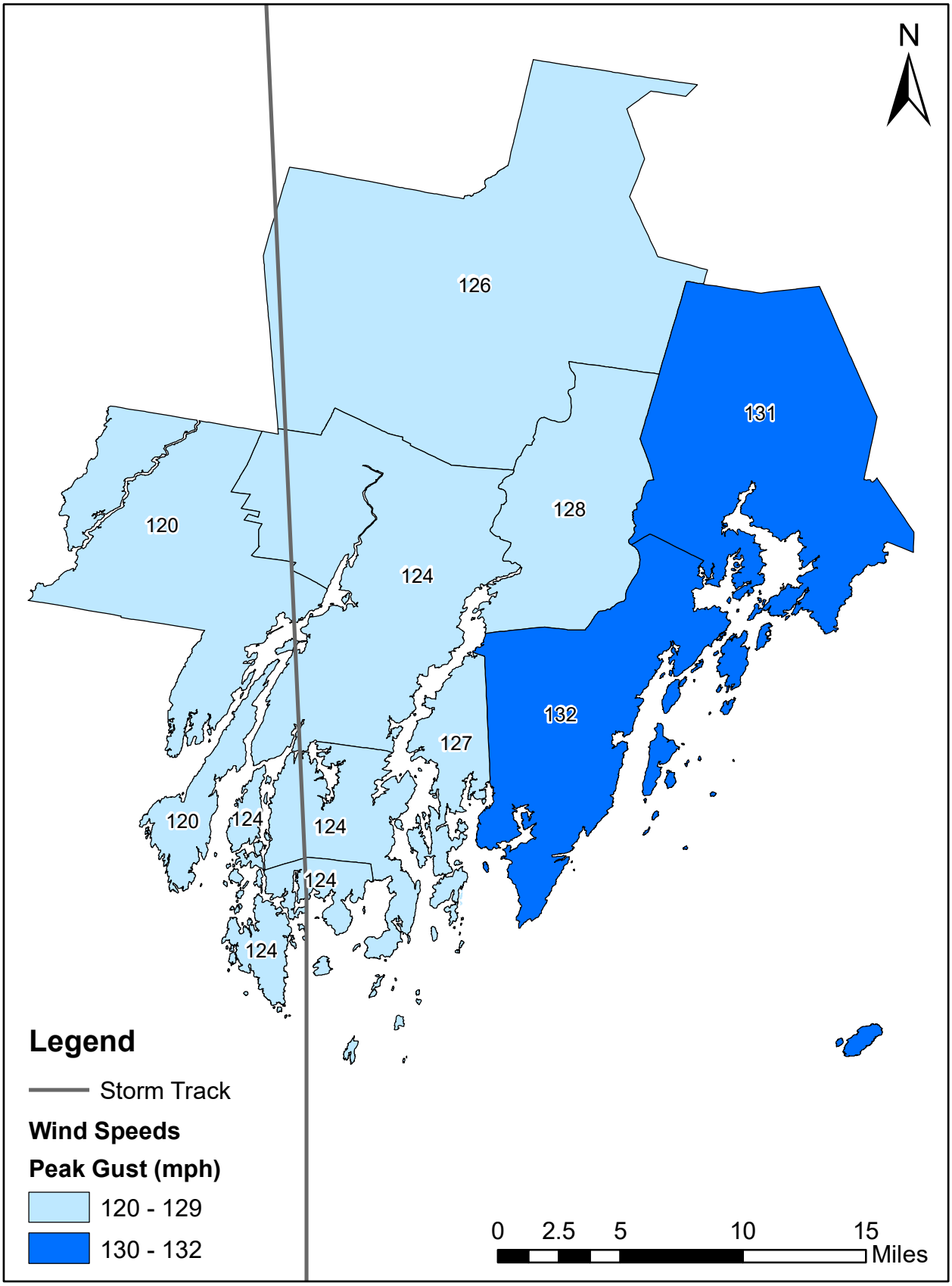
Figure 1

Hurricane Scenario Event
Lincoln County, Maine



Peak Gust Wind Speeds
Hurricane Scenario Event
Lincoln County, Maine

Figure 2



Maximum Sustained Wind Speeds
Hurricane Scenario Event
Lincoln County, Maine

Figure 3

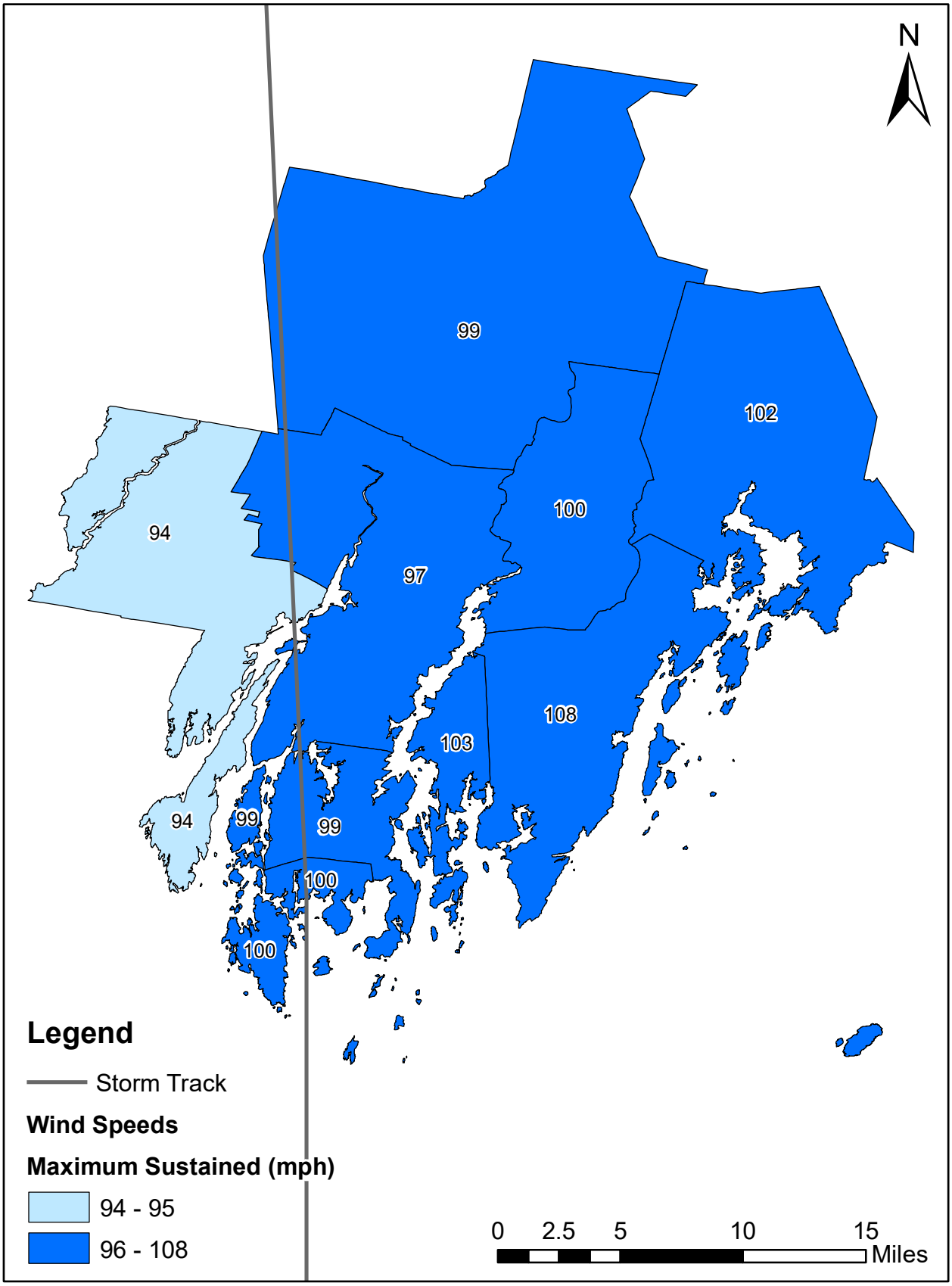
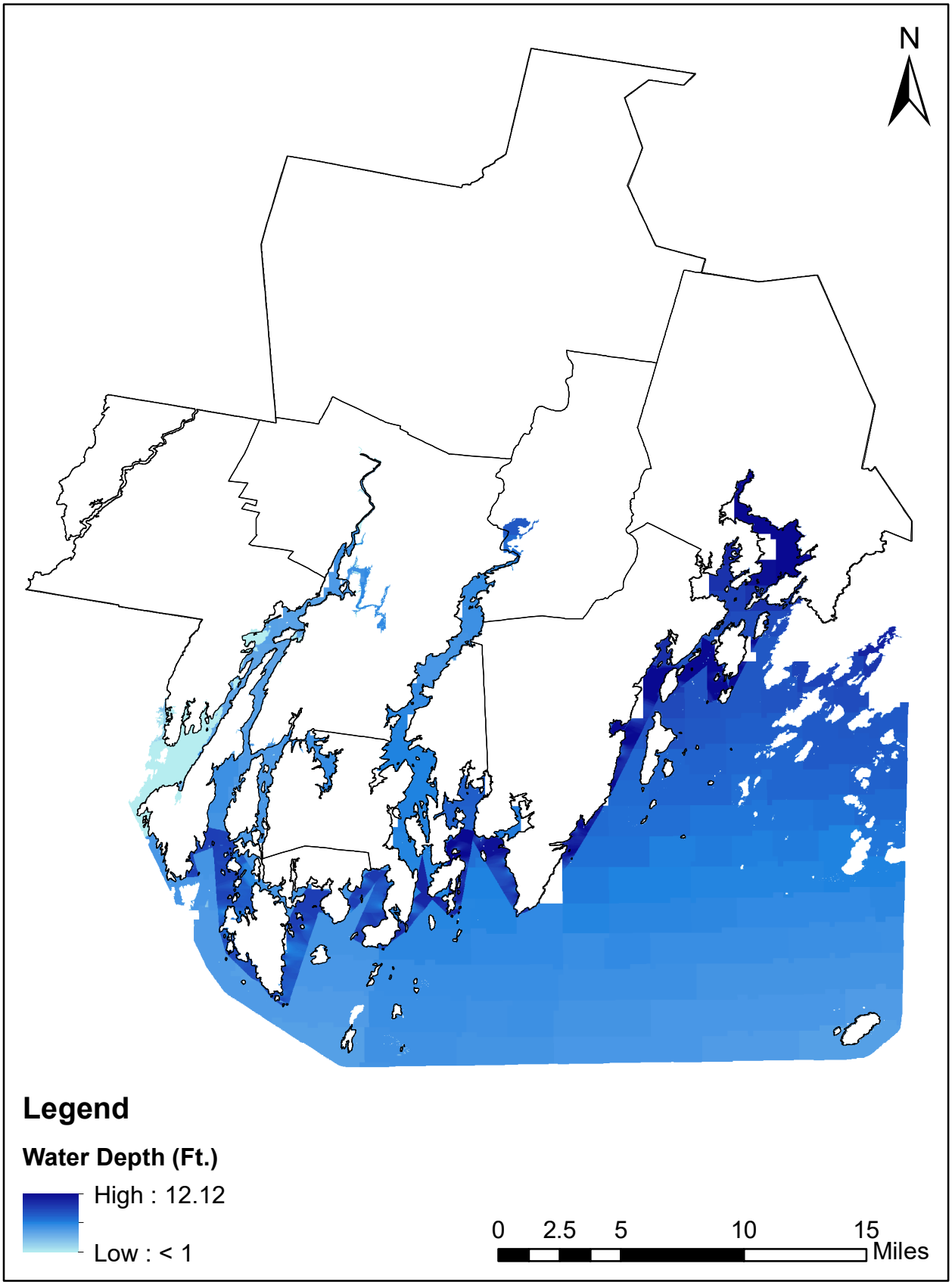


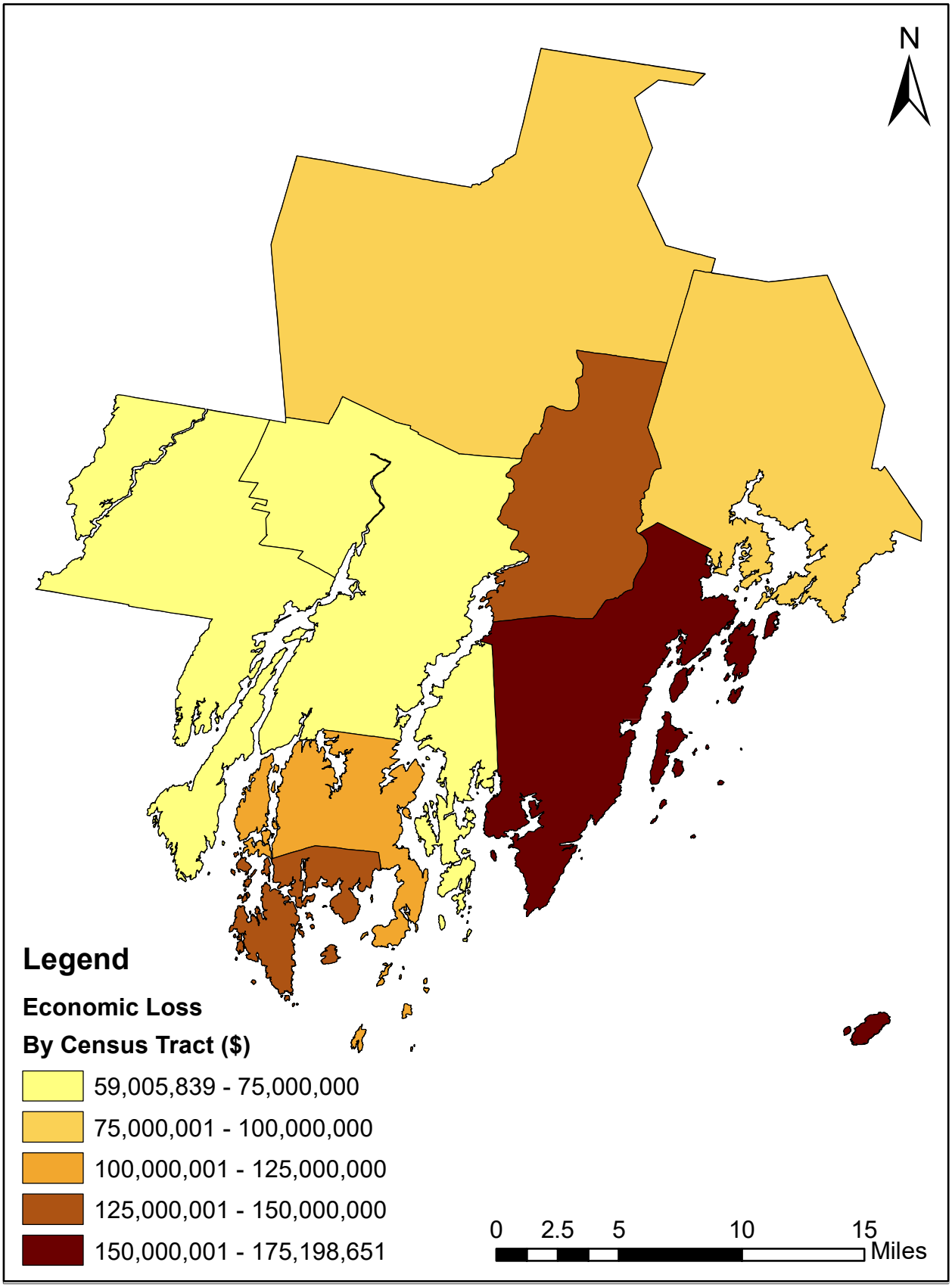
Figure 4

Hurricane Surge Inundation
Lincon County, Maine



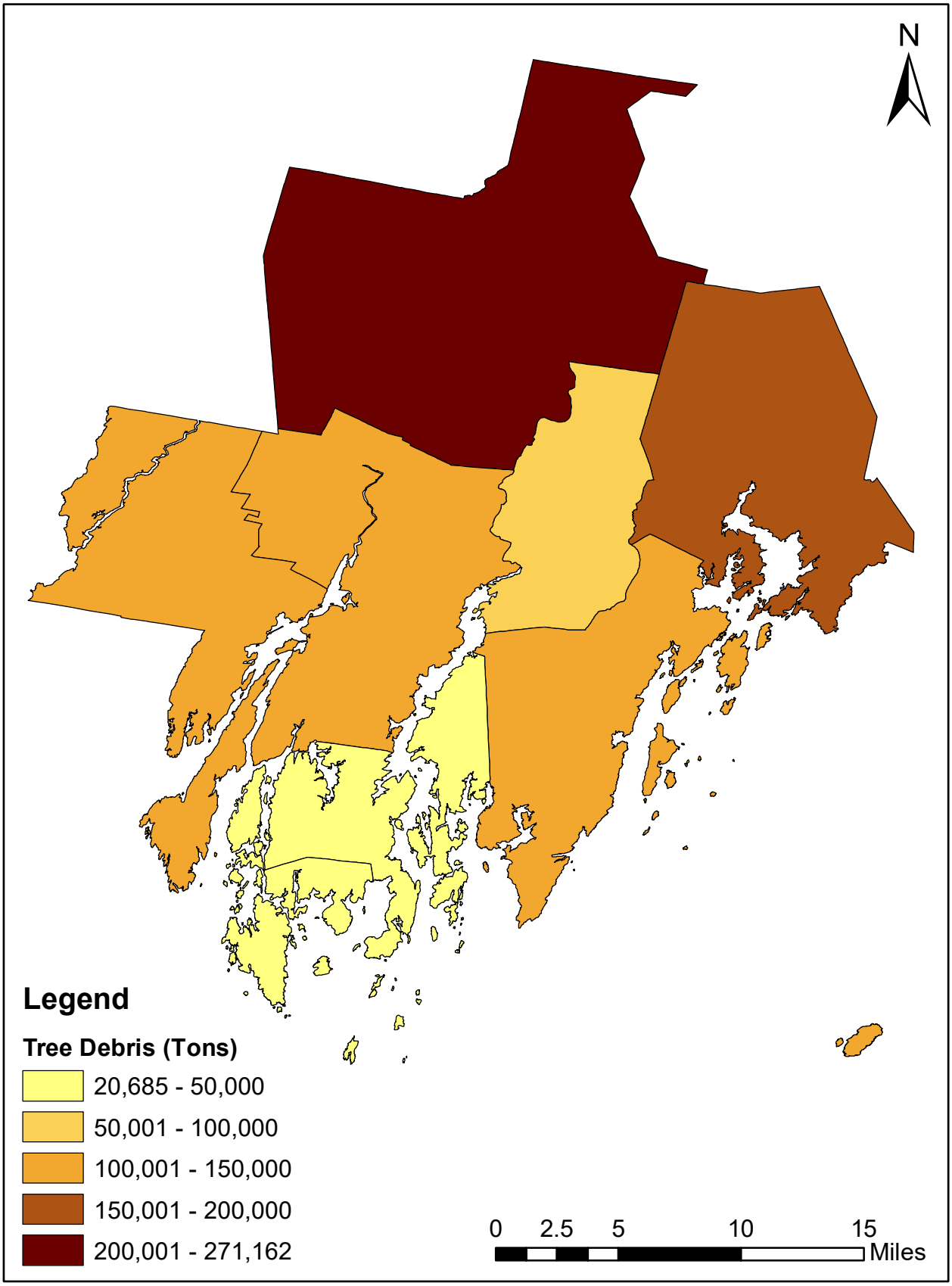
Combined Hurricane Wind and Surge Direct Economic Losses to Buildings Lincon County, Maine

Figure 5



Estimated Tree Debris (Tons)
Hurricane Scenario Event
Lincoln County, Maine

Figure 6



Building Inventory

General Building Stock

Hazus estimates that there are 24,213 buildings in the region which have an aggregate total replacement value of 5,211 million (2014 dollars). Table 1 presents the relative distribution of the value with respect to the general occupancies. Appendix B provides a general distribution of the building value by State and County.

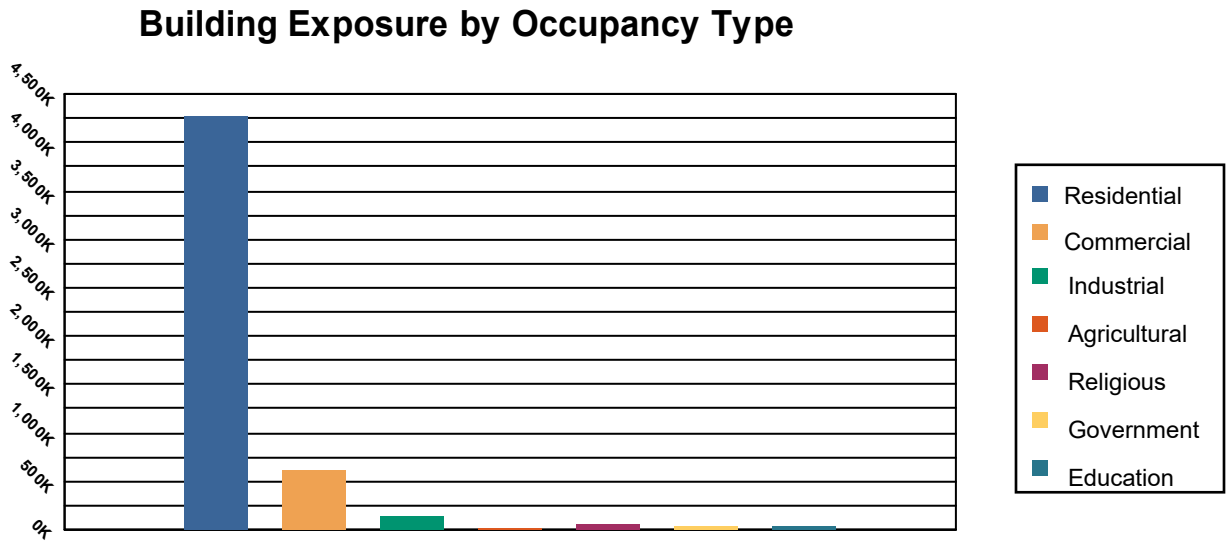


Table 1: Building Exposure by Occupancy Type

Occupancy	Exposure ($1000)	Percent of Tota
Residential	4,276,641	82.07%
Commercial	616,087	11.82%
Industrial	147,579	2.83%
Agricultural	28,212	0.54%
Religious	55,134	1.06%
Government	42,685	0.82%
Education	44,382	0.85%
Total	**5,210,720**	**100.00%**

Essential Facility Inventory

For essential facilities, there are 2 hospitals in the region with a total bed capacity of 109 beds. There are 25 schools, 28 fire stations, 5 police stations and 1 emergency operation facilities.

Building Damage for Hurricane Wind

General Building Stock Damage

Hazus estimates that about 7,342 buildings will be at least moderately damaged. This is over 30% of the total number of buildings in the region. There are an estimated 1,209 buildings that will be completely destroyed. The definition of the 'damage states' is provided in the Hazus Hurricane technical manual. Table 2 below summarizes the expected damage by general occupancy for the buildings in the region. Table 3 summarizes the expected damage by general building type.

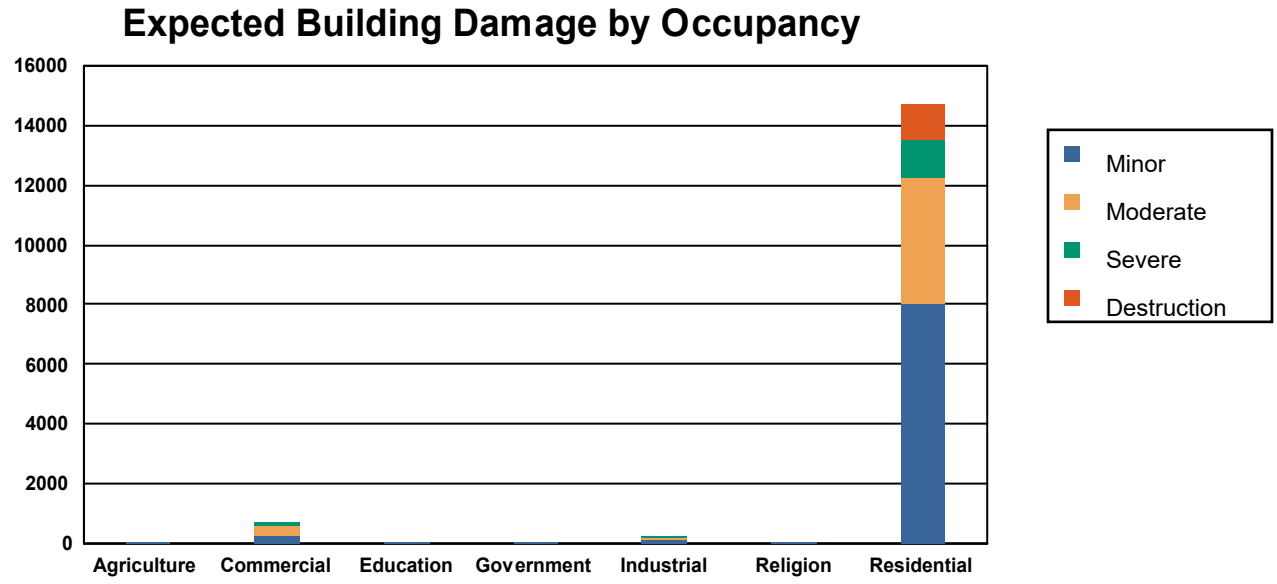
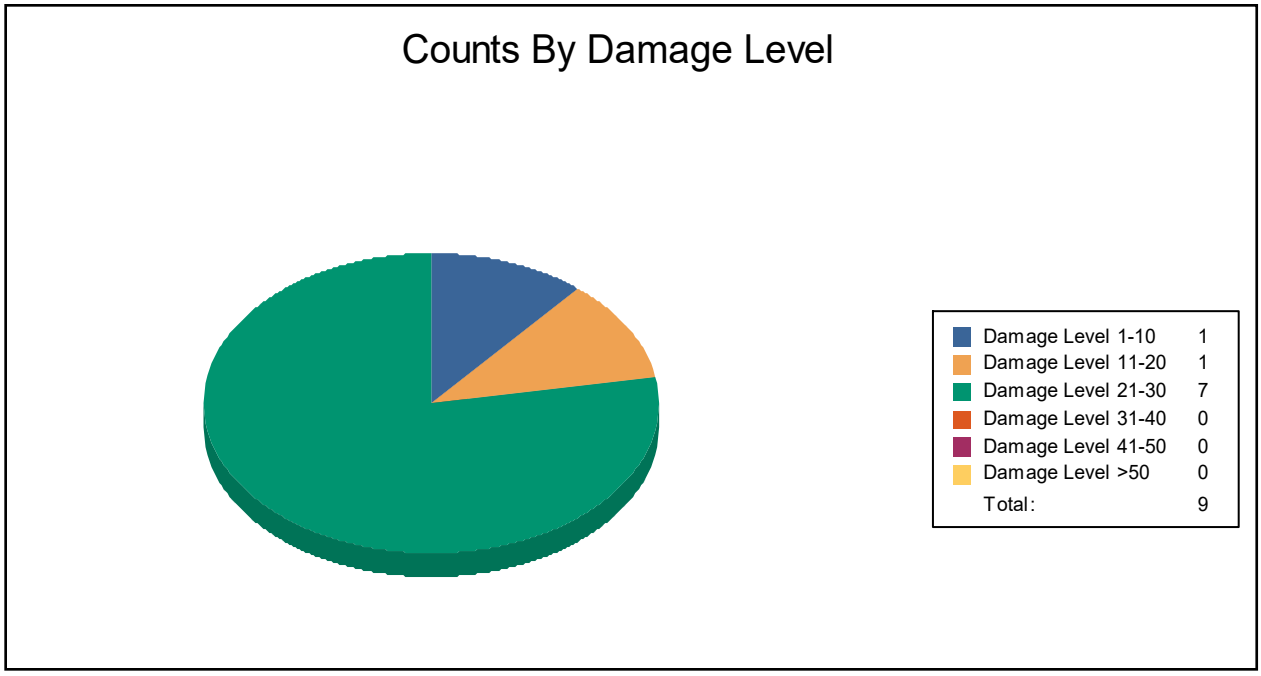


Table 2: Expected Building Damage by Occupancy

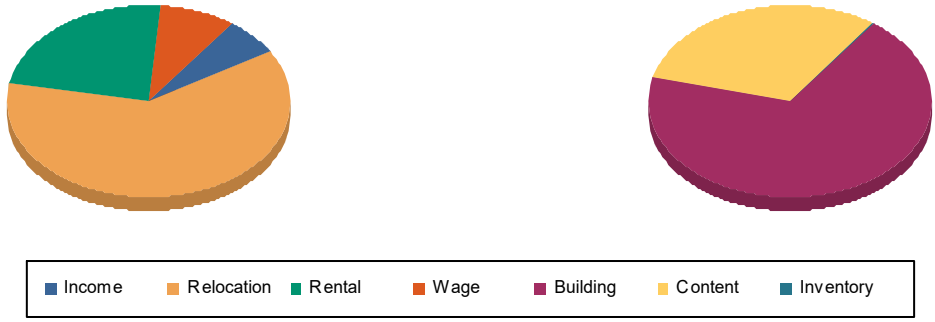
	None		Minor		Moderate		Severe		Destruction	
Occupancy	**Count**	**(%)**	**Count**	**(%)**	**Count**	**(%)**	**Count**	**(%)**	**Count**	**(%)**
Agriculture	34.07	30.97	35.49	32.26	23.33	21.21	13.67	12.43	3.44	3.13
Commercial	358.51	33.98	277.40	26.29	275.09	26.07	142.17	13.48	1.83	0.17
Education	14.61	33.21	11.09	25.20	11.61	26.38	6.69	15.20	0.01	0.02
Government	20.52	38.00	13.32	24.66	13.38	24.77	6.78	12.56	0.00	0.01
Industrial	135.86	34.84	92.99	23.84	99.06	25.40	57.85	14.83	4.24	1.09
Religion	29.04	35.85	25.01	30.87	18.83	23.25	8.09	9.99	0.03	0.04
Residential	7,770.15	34.57	8,053.02	35.82	4,208.70	18.72	1,247.92	5.55	1,199.22	5.33
Total	**8,362.76**		**8,508.31**		**4,649.99**		**1,483.17**		**1,208.77**	

Expected Building Damage by Occupancy for Hurricane Surge

	1-10		11-20		21-30		31-40		41-50		>50	
Occupancy	**Count**	**(%)**	**Count**	**(%)**	**Count**	**(%)**	**Count**	**(%)**	**Count**	**(%)**	**Count**	**(%)**
Agriculture	0	0	0	0	0	0	0	0	0	0	0	0
Commercial	0	0	0	0	0	0	0	0	0	0	0	0
Education	0	0	0	0	0	0	0	0	0	0	0	0
Government	0	0	0	0	0	0	0	0	0	0	0	0
Industrial	0	0	0	0	0	0	0	0	0	0	0	0
Religion	0	0	0	0	0	0	0	0	0	0	0	0
Residential	1	11	1	11	7	78	0	0	0	0	0	0
Total	**1**		**1**		**7**		**0**		**0**		**0**	



Total Loss by General Occupancy for Hurricane Wind



Loss Type by General Occupancy

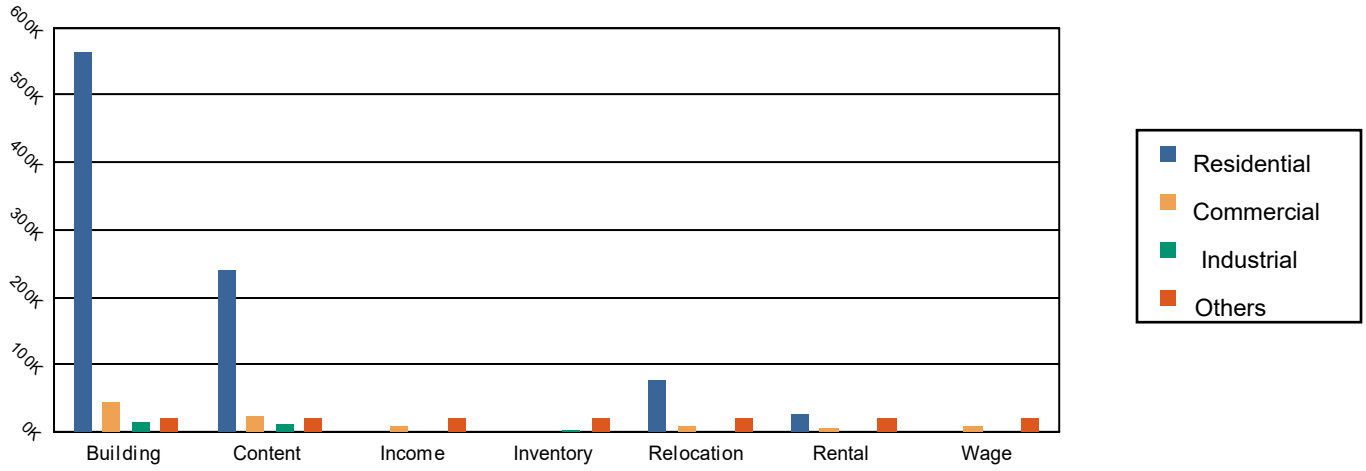


Table 5: Building-Related Economic Loss Estimates

(Thousands of dollars)

Category	Area	Residential	Commercial	Industrial	Others	Total
Property Damage						
	Building	563,917.52	44,295.95	14,126.30	11,256.23	633,595.99
	Content	239,711.45	24,883.42	11,843.02	6,136.26	282,574.16
	Inventory	0.00	536.12	2,100.25	176.33	2,812.70
	Subtotal	**803,628.97**	**69,715.48**	**28,069.57**	**17,568.82**	**918,982.84**
Business Interruption Loss						
	Income	771.43	8,324.40	271.98	200.99	9,568.79
	Relocation	78,206.90	8,790.95	993.84	2,489.67	90,481.36
	Rental	28,521.05	5,113.66	174.59	244.57	34,053.87
	Wage	1,809.19	8,484.45	453.10	2,071.62	12,818.35
	Subtotal	**109,308.56**	**30,713.45**	**1,893.51**	**5,006.84**	**146,922.37**
Total						
	Total	**912,937.53**	**100,428.93**	**29,963.08**	**22,575.67**	**1,065,905.21**

Table 5

Building-Related Economic Loss Estimates for Hurricane Surge

(Millions of dollars)

Category	Area	Residential	Commercial	Industrial	Others	Total
Building Loss						
	Building	6.60	0.75	0.12	0.04	7.51
	Content	5.86	2.24	0.34	0.26	8.70
	Inventory	0.00	0.03	0.04	0.00	0.07
	Subtotal	**12.46**	**3.03**	**0.50**	**0.30**	**16.29**
Business Interruption						
	Income	0.13	1.45	0.00	0.09	1.68
	Relocation	2.25	0.37	0.00	0.06	2.68
	Rental Income	0.71	0.18	0.00	0.01	0.90
	Wage	0.34	2.02	0.01	1.59	3.95
	Subtotal	**3.44**	**4.02**	**0.01**	**1.75**	**9.21**
ALL	**Total**	**15.90**	**7.05**	**0.51**	**2.05**	**25.49**

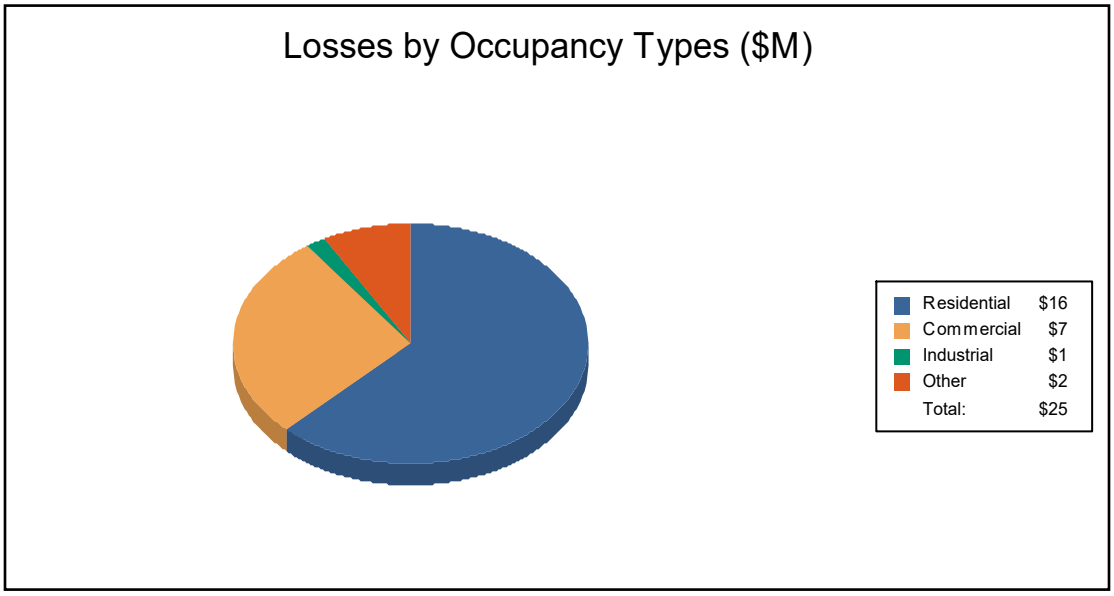


Table 6

Combined Wind and Flood Direct Economic Losses for Buildings

January 08, 2019

All values are in thousands of dollars

	Capital Stock Losses				
	Building Loss	Contents Loss	Inventory Loss	Total Loss	Loss Ratio %
Lincoln	631,533	290,039	2,881	924,453	12.12
Total	**631,533**	**290,039**	**2,881**	**924,453**	**12.12**
Study Region Total	**631,533**	**290,039**	**2,881**	**924,453**	**12.12**

Totals only reflect data for those census tracts/blocks included in the user's study region and will reflect the entire county/state only if all of the census blocks for that county/state were selected at the time of study region creation.

Study Region: LincolnCty_Surge
Scenario: Surge
Return Period: Mix0

Table 7

Hospital Functionality:

January 8, 2019

		At Day 1		At day 3		At day 7		At day 30		At day 90	
	Total # of Beds	# of Beds	%	# of Beds	%	# of Beds	%	# of Beds	%	# of Beds	%
Maine											
Lincoln											
Medium Hospital (50 to 150 Beds)	71	0	0.0	0	0.0	71	100.0	71	100.0	71	100.0
Small Hospital (less than 50 Beds)	38	0	0.0	0	0.0	0	0.0	38	100.0	38	100.0
Total	**109**	**0**	**0.0**	**0**	**0.0**	**71**	**65.1**	**109**	**100.0**	**109**	**100.0**
Total	**109**	**0**	**0.0**	**0**	**0.0**	**71**	**65.1**	**109**	**100.0**	**109**	**100.0**
Study RegionTotal	**109**	**0**	**0.0**	**0**	**0.0**	**71**	**65.1**	**109**	**100.0**	**109**	**100.0**

Totals only reflect data for those census tracts/blocks included in the user's study region and will reflect the entire county/state only if all of the census blocks for that county/state were selected at the time of study region creation.

Study Region : LincolnCty_Surge
Scenario : ME_WorstCase_1

School Functionality:

January 08, 2019

	Count	Functionality (%)
Maine		
Lincoln	25	0.00
Total	**25**	**0.00**
Study Region	**25**	**0.00**

Totals only reflect data for those census tracts/blocks included in the user's study region and will reflect the entire county/state only if all of the census blocks for that county/state were selected at the time of study region creation.

Emergency Response Center Facility Functionality:

January 08, 2019

	Count	Functionality (%)
Maine		
Lincoln	1	100.00
Total	**1**	**100.00**
Study Region Total	**1**	**100.00**

Totals only reflect data for those census tracts/blocks included in the user's study region and will reflect the entire county/state only if all of the census blocks for that county/state were selected at the time of study region creation.

Police Station Facility Functionality:

January 08, 2019

	Count	Functionality (%)
Maine		
Lincoln	5	100.00
Total	**5**	**100.00**
Study Region Total	**5**	**100.00**

Totals only reflect data for those census tracts/blocks included in the user's study region and will reflect the entire county/state only if all of the census blocks for that county/state were selected at the time of study region creation.

Fire Station Facility Functionality:

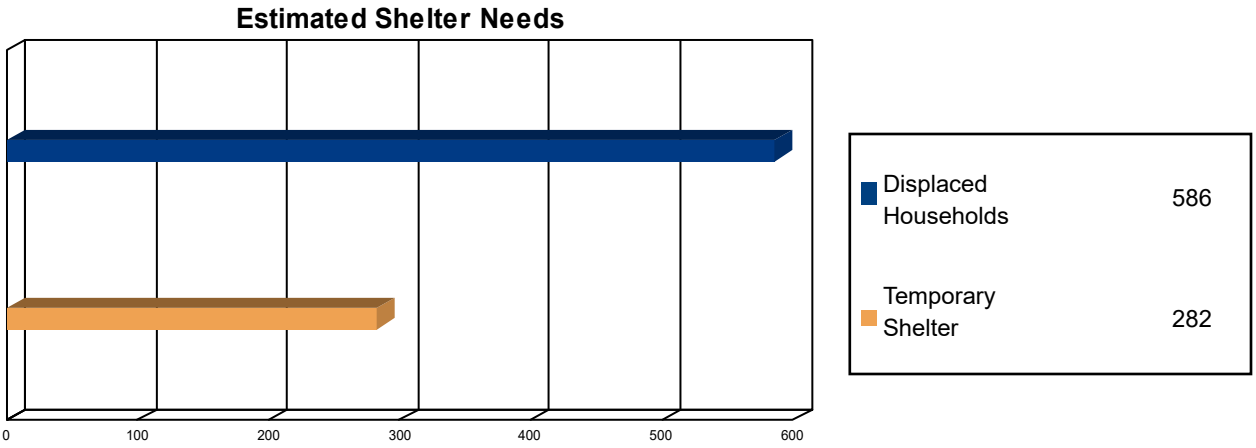
January 08, 2019

	Count	Functionality (%)
Maine		
Lincoln	28	100.00
Total	**28**	**100.00**
Study Region Total	**28**	**100.00**

Totals only reflect data for those census tracts/blocks included in the user's study region and will reflect the entire county/state only if all of the census blocks for that county/state were selected at the time of study region creation.

Social Impact for Hurricane Wind

Shelter Requirement

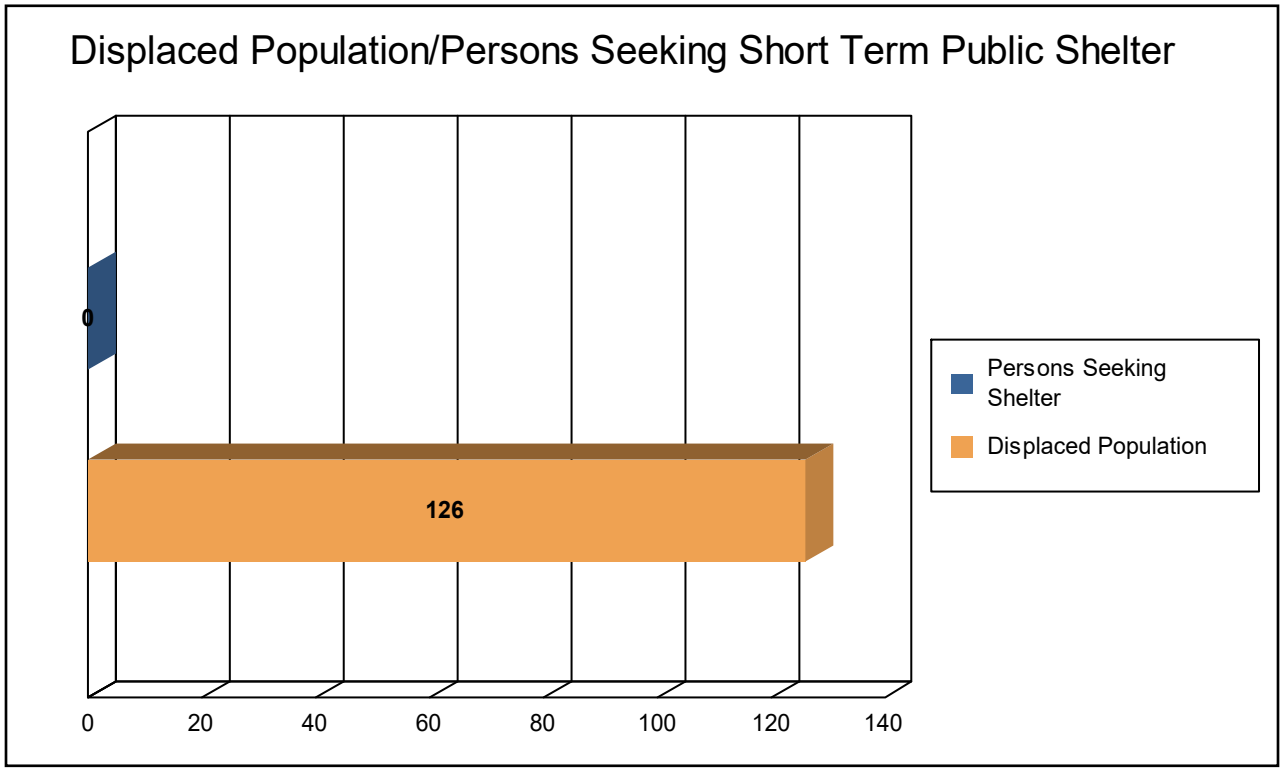


Hazus estimates the number of households that are expected to be displaced from their homes due to the hurricane and the number of displaced people that will require accommodations in temporary public shelters. The model estimates 586 households to be displaced due to the hurricane. Of these, 282 people (out of a total population of 34,457) will seek temporary shelter in public shelters.

Social Impact for Hurricane Surge

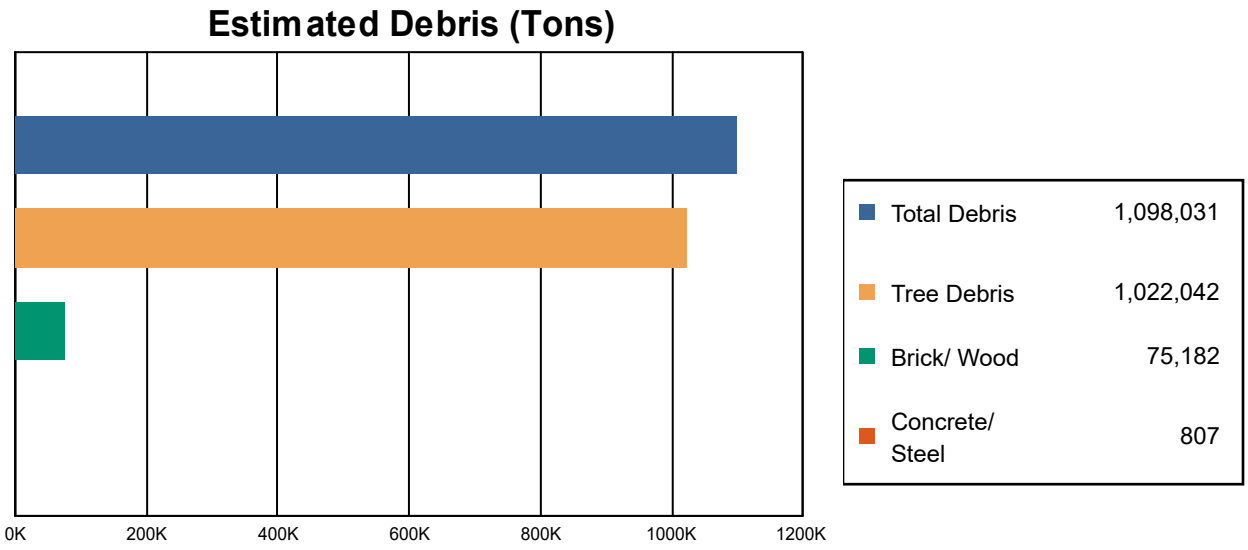
Shelter Requirements

Hazus estimates the number of households that are expected to be displaced from their homes due to the flood and the associated potential evacuation. Hazus also estimates those displaced people that will require accommodations in temporary public shelters. The model estimates 42 households (or 126 of people) will be displaced due to the flood. Displacement includes households evacuated from within or very near to the inundated area. Of these, 0 people (out of a total population of 34,457) will seek temporary shelter in public shelters.



Induced Hurricane Wind Damage

Debris Generation



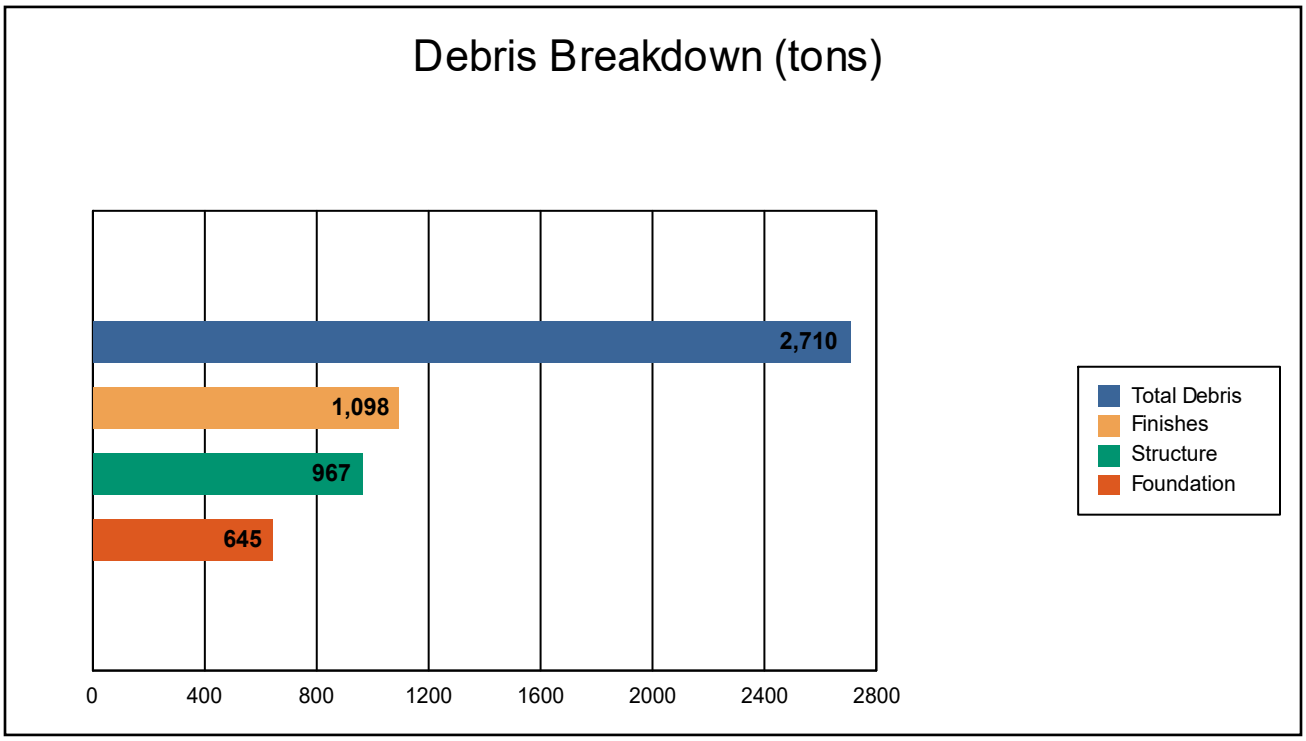
Hazus estimates the amount of debris that will be generated by the hurricane. The model breaks the debris into four general categories: a) Brick/Wood, b) Reinforced Concrete/Steel, c) Eligible Tree Debris, and d) Other Tree Debris. This distinction is made because of the different types of material handling equipment required to handle the debris.

The model estimates that a total of 1,098,031 tons of debris will be generated. Of the total amount, 928,024 tons (85%) is Other Tree Debris. Of the remaining 170,007 tons, Brick/Wood comprises 44% of the total, Reinforced Concrete/Steel comprises of 0% of the total, with the remainder being Eligible Tree Debris. If the building debris tonnage is converted to an estimated number of truckloads, it will require 3040 truckloads (@25 tons/truck) to remove the building debris generated by the hurricane. The number of Eligible Tree Debris truckloads will depend on how the 94,018 tons of Eligible Tree Debris are collected and processed. The volume of tree debris generally ranges from about 4 cubic yards per ton for chipped or compacted tree debris to about 10 cubic yards per ton for bulkier, uncompacted debris.

Induced Hurricane Surge Damage

Debris Generation

Hazus estimates the amount of debris that will be generated by the flood. The model breaks debris into three general categories: 1) Finishes (dry wall, insulation, etc.), 2) Structural (wood, brick, etc.) and 3) Foundations (concrete slab, concrete block, rebar, etc.). This distinction is made because of the different types of material handling equipment required to handle the debris.



The model estimates that a total of 2,710 tons of debris will be generated. Of the total amount, Finishes comprises 41% of the total, Structure comprises 36% of the total, and Foundation comprises 24%. If the debris tonnage is converted into an estimated number of truckloads, it will require 109 truckloads (@25 tons/truck) to remove the debris generated by the flood.

Hurricane Scenario

Hazus used the following set of information to define the hurricane parameters for the hurricane loss estimate provided in this report.

Scenario Name: ME_WorstCase_1

Type: Deterministic

Maximum Peak Gust in Study Region: 132 mph

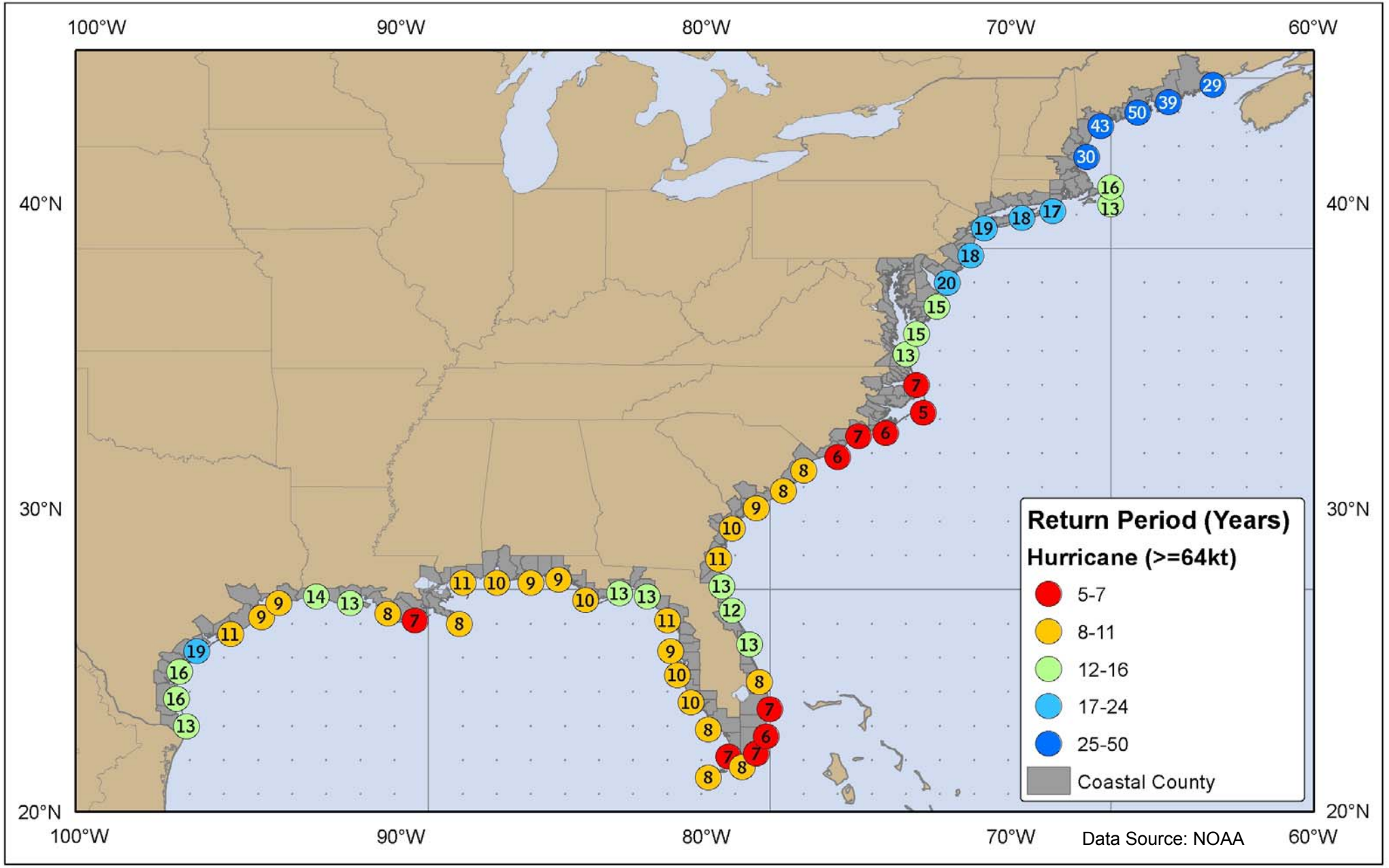
Storm Information: User Defined Scenario Import File:
File Name: \\NESEC-SHARED\shared_1\Maine Project\Counties Projects\Maine_WorstCaseHU_scenario.bin
Original Scenario Name: Maine_WorstCase

User Defined Storm Track Input Data

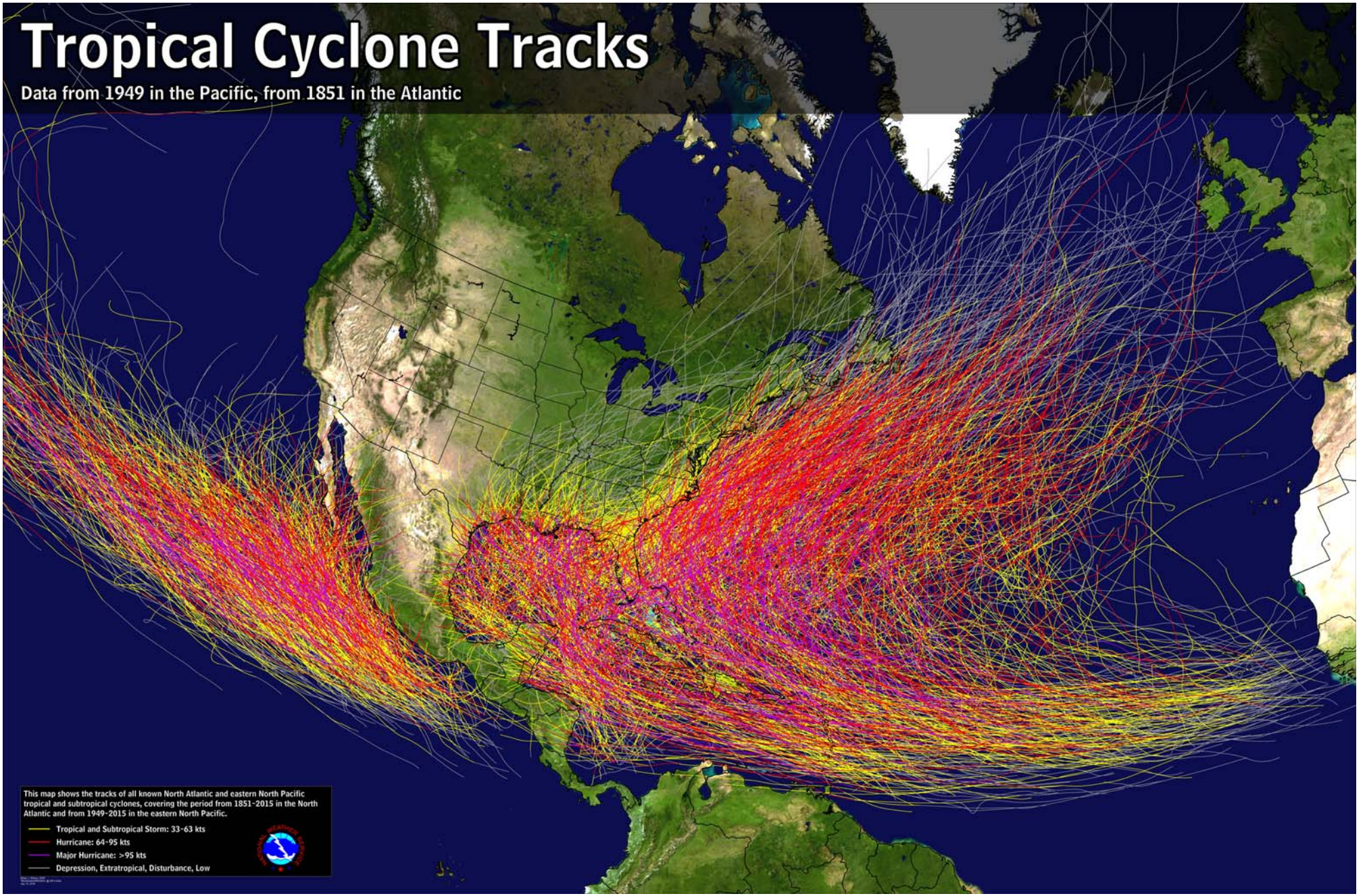
Point	Latitude	Longitude	Time Step (hour)	Translation Speed (mph)	Radius To Max Winds (miles)	Max. Sustained Wind Speed (mph @ 10m)	Cental Pressure (mBar)	Profile Parameter	Radius to Hurricane Force Winds (miles)
1	41.65	-69.64	0.00	--	30.00	115.00	935.00	--	--
2	43.85	-69.64	5.00	--	30.00	115.00	942.00	--	--
3	46.05	-69.74	10.00	--	35.00	81.00	968.00	--	--
4	47.95	-70.14	15.00	--	40.00	52.00	974.00	--	--
5	49.94	-73.64	20.00	--	45.00	40.00	976.00	--	--
6	48.05	-75.74	25.00	--	50.00	40.00	978.00	--	--

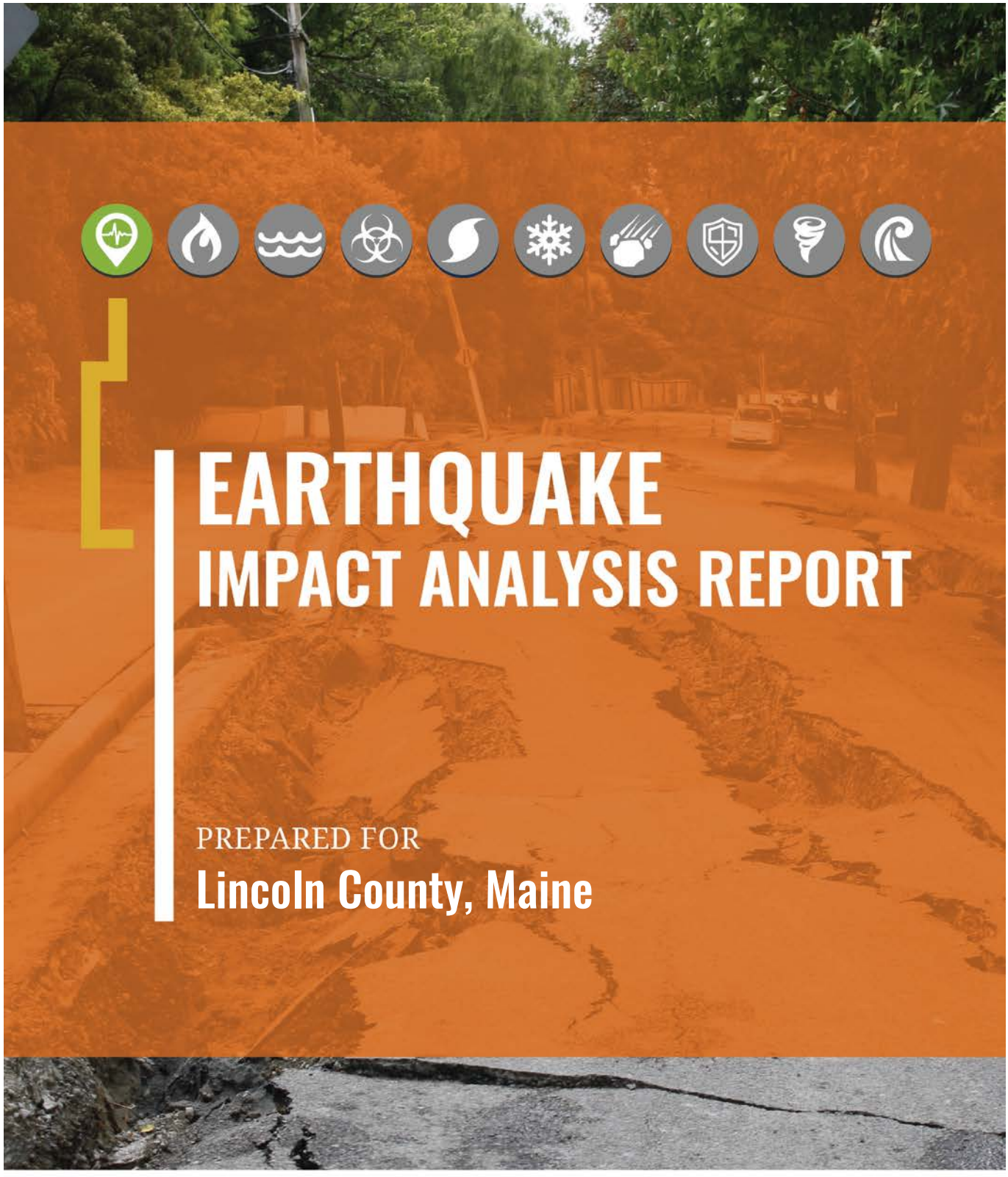
Appendix B

Hurricane Return Periods for U.S. Coastal Counties



Appendix C


Tropical Cyclone Tracks
Data from 1949 in the Pacific, from 1851 in the Atlantic
This map shows the tracks of all known North Atlantic and eastern North Pacific tropical and subtropical cyclones, covering the period from 1851-2015 in the North Atlantic and from 1949-2015 in the eastern North Pacific.
Tropical and Subtropical Storm: 33-63 kts
Hurricane: 64-95 kts
Major Hurricane: >95 kts
Depression, Extratropical, Disturbance, Low



EARTHQUAKE
IMPACT ANALYSIS REPORT

PREPARED FOR

Lincoln County, Maine

THIS REPORT DEVELOPED BY

The Northeast States Emergency Consortium

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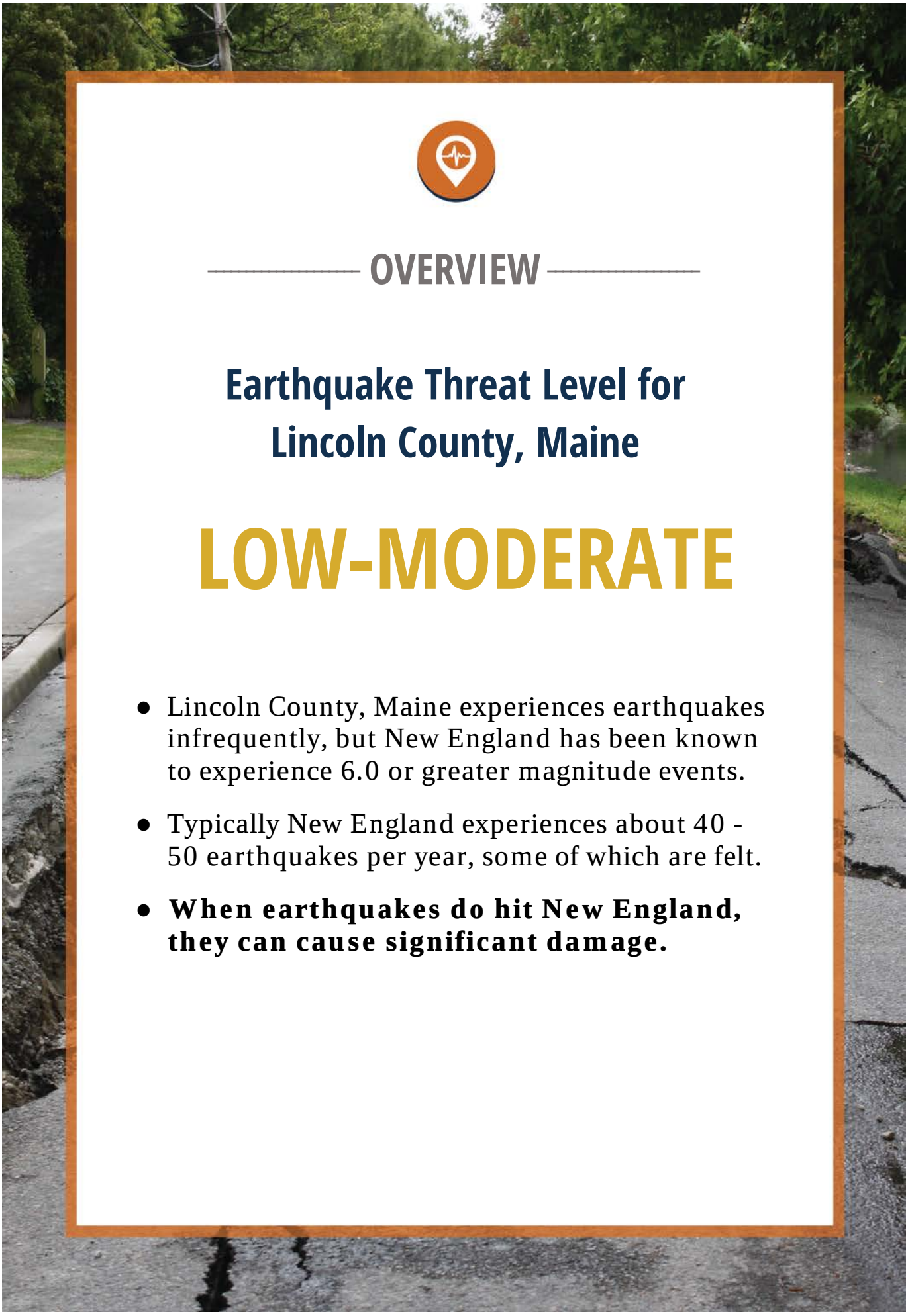
UTILIZING FEMA'S

HAZUS MH
EARTHQUAKE • WIND • FLOOD

PROGRAM



OVERVIEW

Earthquake Threat Level for Lincoln County, Maine

LOW-MODERATE

- Lincoln County, Maine experiences earthquakes infrequently, but New England has been known to experience 6.0 or greater magnitude events.
- Typically New England experiences about 40 - 50 earthquakes per year, some of which are felt.
- **When earthquakes do hit New England, they can cause significant damage.**

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I. INTRODUCTION

The first step in preparing for and mitigating any disaster is to estimate its potential impact on an area or region. The purpose of this study is to provide emergency managers and other government decision makers with an estimate of the potential impact of a moderate to large size earthquake affecting Lincoln County, Maine.

METHODOLOGY The methodology used to produce the results contained in this report is called HAZUS-MH (referred to as HAZUS) which was developed by the Federal Emergency Management Agency (FEMA) in cooperation with the National Institute of Building Sciences (NIBS). HAZUS uses Geographic Information System (GIS) software to calculate, map and display earthquake loss data. HAZUS uses mathematical formulas and information about building stock, geologic conditions, potential earthquakes, economic data and other information to estimate losses.

DATA COMPILATION This report utilizes default data contained in the HAZUS software compiled from available national databases. This data has been augmented using available state and county data. These default databases describe in general terms the building inventory and economic and social structure of Lincoln County, Maine. The default data provide a preliminary estimate of earthquake losses and impacts. More accurate estimates require detailed information about local geology, buildings, utilities, transportation systems and other specific information. This data is usually available from local and state agencies and departments and typically can be added to the HAZUS data base by local and state emergency personnel. In some cases, however, technical assistance from geologists, engineers and GIS experts may be required.

ESTIMATION It is imperative to point out that this HAZUS impact analysis is not a precise prediction, but rather a rough estimate of potential damage, human and economic impacts that may result from a single future hypothetical earthquake occurring in a specific location. While this estimate is based on current scientific and engineering knowledge, there can be large uncertainties in the results especially for individual buildings and facilities. More refined building specific results typically require detailed engineering studies and specific examinations beyond the scope and intent of HAZUS.

***DISCLAIMER** The estimates of social and economic impacts contained in this report are based on HAZUS-MH Version 4.2 that utilizes 2010 census data and current scientific and engineering knowledge. There are uncertainties inherent in any loss estimation technique. Therefore, there may be significant differences between the modeled results contained in this report and the actual social and economic losses following a specific earthquake. These results can be improved by using enhanced inventory, geotechnical, and ground motion data.*

II. EXECUTIVE SUMMARY OF IMPACT

The following is an Executive Summary of the estimated potential impact of a magnitude 6.5 earthquake occurring near Cape Ann, MA and affecting Lincoln County, Maine.

Estimated Direct Losses

Calculated by estimating the damage to buildings caused by earthquake ground shaking.

General Building Stock	$20,401,000
Transportation System	$1,916,000
Lifeline Utilities	$2,233,000
Combined Estimated Losses	$24,550,000

Essential Facilities

By averaging probabilities, we have calculated how the functionality of essential facilities will be impacted.

Emergency Operations Centers (EOC's)	88.0%
Police Stations	88.0 - 89.3%
Fire Stations	74.8 - 96.0%
Hospitals and Medical Care Facilities	87.1 - 89.8%
Schools	74.8 - 88.0%
Highway Bridges	84.7 - 99.9%
Highways	100%
Airport Facilities	99.8%
Airport Runways	100%

Estimated Debris

Calculated by estimating the total amount of debris generated.

Generated (Tons)	6,000

Estimated Social Impact

By averaging probabilities, we have calculated how many individuals and households will be affected.

Casualties	6
Displaced Households	7
People Requiring Shelter	4
Households Without Power	0
Households Without Water	0

III. THE EARTHQUAKE HISTORY OF LINCOLN COUNTY, MAINE

Both historically and in recent times, earthquakes have been felt in Lincoln County, Maine which have been centered throughout the Northeast United States and Quebec, Canada. Some of the largest earthquakes to occur in New England occurred in 1638 just north of Concord, New Hampshire (6.5), in 1755 off Cape Ann, Massachusetts (6.0), and in 1940 near Ossipee, New Hampshire (5.8). Since the 1980s, moderate size earthquakes with a magnitude of 4.5 to 6.0 have occurred in Central New Hampshire, northern New York State and central New Brunswick. Typically the region experiences about 40-50 earthquakes per year, some of which are felt. For additional information on the earthquake history of Maine see Appendix B.

The Study Earthquake

The scenario earthquake used for this study has an epicenter near Cape Ann, MA with a scenario magnitude of 6.5. The location and magnitude for this event is based on scenarios developed by Professor John Ebel, Boston College, Weston Observatory (See Appendix C). Figure 1 illustrates the location of the study earthquake and Figure 2 the ground shaking caused by the event.

The Study Area

The area chosen for this study was Lincoln County, Maine with a land area of approximately 700 square miles and a 2010 US Census population of 34,457. The study area includes 9 census tracts which are the basic units of analysis for the HAZUS Methodology.

Figure 1 illustrates the location of the study area.

IV. DIRECT ECONOMIC IMPACT

General Building Stock

HAZUS estimates losses to the general building stock using default national inventories. This report was compiled based on HAZUS default data and has been augmented using available state and county data. Damage to the general building stock is not evaluated on a building by building basis. Rather, the methodology estimates losses based on the general character of the building stock (e.g. occupancy, age, height, floor area, type and class) in each census tract. Damage estimates are then converted into dollar losses. The direct losses to the general building stock were estimated to be $20,401,000. HAZUS estimates the total value of the building stock exposure for Lincoln County, Maine to be $5,210,720,000.

Therefore, these losses represent approximately 0.4 percent of the total value of the building stock. These total losses include direct building damage (structural, non-structural, contents and inventory) and income losses (relocation, income, wages and rental). Direct losses are $14,248,000 or 69.8 percent of the total losses with income losses of $6,153,000 accounting for the remaining 30.2 percent. Table 1 contains additional information on direct economic losses for buildings. Figure 3 is a map of Economic Losses to Buildings by census tracts.

Transportation Systems

The HAZUS default database of transportation facilities was created with data obtained from sources such as the Federal Highway Administration, the Federal Aviation Administration and the Census Bureau's Topographically Integrated Encoding and Referencing (TIGER) Files. Total losses to the transportation system are estimated at $1,916,000. The direct losses and post-earthquake probability of functionality by transportation mode were estimated to be as follows:

MODE	LOSS	RANGE OF PROBABILITY OF FUNCTION (%)
Highway Bridges	$1,622,000	84.7 - 99.9
Highway Roads	$0	100
Rail Tracks	$0	100
Rail Facilities	*$N/A*	*N/A*
Light Rail Facilities	*$N/A*	*N/A*
Bus Facilities	*$N/A*	*N/A*

MODE	LOSS	RANGE OF PROBABILITY OF FUNCTION (%)
Port Facilities	*$N/A*	*N/A*
Ferry Facilities	$67,000	99.7 -99.9
Airport Runways	$0	100
Airport Facilities	$227,000	99.8

Facilities in italics have no HAZUS default data and therefore have no values for losses and functionality.

Table 2 contains additional information on direct economic losses for transportation systems. Figure 4 is a map of probability of functionality of highway bridges on the day of the earthquake.

Lifeline Utilities

The HAZUS methodology estimates losses for selected types of lifeline utilities. Lifeline utilities are vital to the function of a community or state. Damage to these systems can be devastating in terms of the health and safety of the citizens. Total direct losses to lifeline utilities were estimated at $2,233,000.

The direct total losses (facilities, pipelines and distribution lines) and post-earthquake facility functionality by type of utility were estimated to be as follows:

TYPE	LOSS	RANGE OF PROBABILITY OF FUNCTION (%)
Potable Water[1]	$369,000	N/A
Waste Water	$864,000	95.6 - 99.5
Oil	*$N/A*	*N/A*
Natural Gas[1]	$64,000	N/A
Electric Power	$936,000	97.2 - 97.5
Communications	$0	99.8

Facilities in italics have no HAZUS default data and therefore have no values for losses and functionality.

[1] For more information on pipelines, see the Fire Following Earthquake section on page 12.

HAZUS estimated that no people would be without potable water or electric power immediately following the earthquake.

Table 3 contains additional information on direct economic losses for utilities. Table 4 contains additional information about electric power and potable water system performance.

Essential Facilities

The HAZUS methodology estimates losses for selected types of essential facilities. These include hospitals, police stations, fire stations, emergency operating centers and schools. Schools are included because of the critical role they often play as emergency shelters. Estimated losses to essential facilities are expressed in terms of their ability to function immediately following the earthquake. The average range of probability of functionality for essential facilities was estimated as follows:

FACILITY	RANGE OF PROBABILITY OF FUNCTION (%)
Emergency Operations Centers (EOC's)	88.0
Police Stations	88.0 - 89.3
Fire Stations	74.8 - 96.0
Hospitals and Medical Care Facilities	87.1 - 89.8
Schools	74.8 - 88.0

Tables 5, 6, 7, 8 & 9 contain additional information about the functionality of hospitals, schools, emergency operations centers, police stations and fire stations respectively.

HIGH POTENTIAL LOSS FACILITIES HAZUS defines high potential loss facilities as dams and nuclear facilities. High potential loss facilities tend to be unique and complex facilities that require in-depth analysis by structural and geotechnical engineers to assess their vulnerability to earthquakes. For this reason, HAZUS is limited to providing information about the location of the study area's high potential loss facilities and estimated ground shaking. For the Lincoln County, Maine study, Figure 5 is a map of all dams in Lincoln County, Maine in relation to earthquake ground shaking.

Direct Social Impact

CASUALTIES HAZUS utilizes casualty statistics from previous earthquakes to estimate the number of casualties expected from this earthquake. Estimates of casualties are broken down into four severity levels as follows:

- Severity Level 1 - Injury requires basic medical aid without hospitalization
- Severity Level 2 - Injury requires medical hospitalization non-life threatening
- Severity Level 3 - Injury poses immediate life-threatening condition if not treated
- Severity Level 4 - Instantaneously killed or mortally injured.

Casualty estimates are based primarily on building damage, occupancy, time of day. Casualties are estimated for three times of day 2:00 AM, 2:00 PM and 5:00 PM. These three times were selected to evaluate the impact of population distributions primarily at home, at work and commuting. Casualty estimates range from a high of 6 at 2:00 PM to a low of 3 at 2:00 AM. The greatest number of casualties occur at 2:00 PM when most people are likely to be at at work. Conversely, the fewest number of casualties occur at 2:00 AM when most people are likely to be at home.

Table 10 contains a detailed breakdown of casualties by time of day, location and severity.

DISPLACED HOUSEHOLDS AND SHELTERING NEEDS Earthquakes can cause loss of habitability of buildings which contain housing units. Loss of habitability is calculated directly from damage to residential occupancy inventory and loss of electric power and water.

The HAZUS methodology estimates the number of displaced households and the number of those households expected to seek shelter based on the number of non-functioning or inhabitable units. HAZUS estimated that 7 displaced households would result in approximately 4 people requiring emergency shelter. Individuals whose housing becomes uninhabitable will likely seek alternative shelter. Many will stay with friends and relatives. Others will stay in hotels. Some will stay in public shelters. In addition, observations from past disasters show that approximately 80% of the pre-disaster homeless population will seek public shelter in time of disaster.

Finally, data from recent earthquakes indicate that approximately one-third of those seeking public shelter came from residences with no or insignificant structural damage. This perceived structural damage coupled with seasonal variations in Lincoln County, Maine could result in a 50% increase in the estimate of people seeking shelter.

Table 11 contains a summary of estimated displaced households and shelter needs.

Induced Physical Damage

DEBRIS HAZUS include a model that estimates two types of debris caused by earthquake ground shaking. The first type of debris is reinforced concrete and steel that tend to fall in large pieces. These large pieces of debris will need to be broken down into smaller pieces before they can be disposed of. It is likely that cranes and other heavy equipment would be required to remove this type of debris. It is estimated that 2,000 tons of concrete and steel debris will be generated from the earthquake.

The second type of debris include brick, wood, glass, furniture, equipment, plaster walls and other materials that are smaller in size and more easily removed with a bulldozer or hand held tools. It is estimated that the earthquake will generate 4,000 tons of brick wood glass and other small pieces of debris. The combined total debris is estimated to be 6,000 tons. This amount of debris would require an estimated 240 twenty-five ton truck loads to remove.

Table 12 contains a summary of the debris generated by the earthquake broken down by type of debris and county.

FIRE FOLLOWING EARTHQUAKE Fire following earthquake can cause severe losses as evidenced in the 1907 San Francisco Earthquake, the 1994 Northridge Earthquake and the 1995 Kobe Japan Earthquake. A lack of water to fight the fires due to broken water mains can further exacerbate the problem.

While HAZUS does not currently calculate the number of earthquake generated fires, it does estimate 21 broken water mains, and 82 leaks in the water distribution system. It also estimates 4 broken natural gas lines and 14 natural gas line leaks. These numbers are estimated based on the distribution of intensity of earthquake ground shaking and its impact on underground water and gas lines. These estimates can provide some insight as to the potential of fire following earthquake due to broken gas lines and the availability of water to fight fires flowing the earthquake. It should be pointed out that a more complete fire following earthquake model requires extensive input and analysis beyond the present scope of HAZUS.

Table 4 includes a summary of number of broken and leaking underground water and gas lines.

HAZARDOUS SUBSTANCES HAZUS defines hazardous substances as chemicals, reagents, or substances which exhibit physical or health hazards, whether the materials are in a usable or waste state.

The default database was developed using the EPA Toxic Release Inventory (TRI) Database of hazardous material sites. The HAZUS default database contains only those substances that are considered highly toxic, flammable or explosive. In addition it is limited to those facilities where large quantities are stored. Estimating earthquake losses related to the release of

hazardous substances would require in-depth analysis by structural, and geotechnical engineers, health physicists, and chemical experts to assess their vulnerability to earthquakes. For this reason HAZUS is limited to providing geographic information about the location of the study area's hazardous substances and estimated ground shaking. There are four hazardous materials facilities in the HAZUS default database for Lincoln County, Maine, shown in relation to ground shaking levels in Figure 6.

V. RECOMMENDATIONS/NEXT STEPS

This report was compiled based on HAZUS default data and has been augmented using available state and county data. This data provides a solid foundation for estimating losses but needs to be improved upon to yield more accurate results. A copy of the HAZUS default data can be found on the flash drive included with this report. We recommend that Lincoln County, Maine officials review and update their inventory data and resend it to NESEC. NESEC will rerun the HAZUS analysis with the updated inventory and provide an updated draft of this report.

VI. FIGURES, TABLES, AND APPENDICES

FIGURES

Figure 1: The Study Earthquake Scenario
Figure 2: Earthquake Ground Shaking
Figure 3: Economic Losses to Buildings
Figure 4: Highway Bridges Functionality
Figure 5: Dams of Lincoln County, Maine
Figure 6: Hazardous Materials Facilities

TABLES

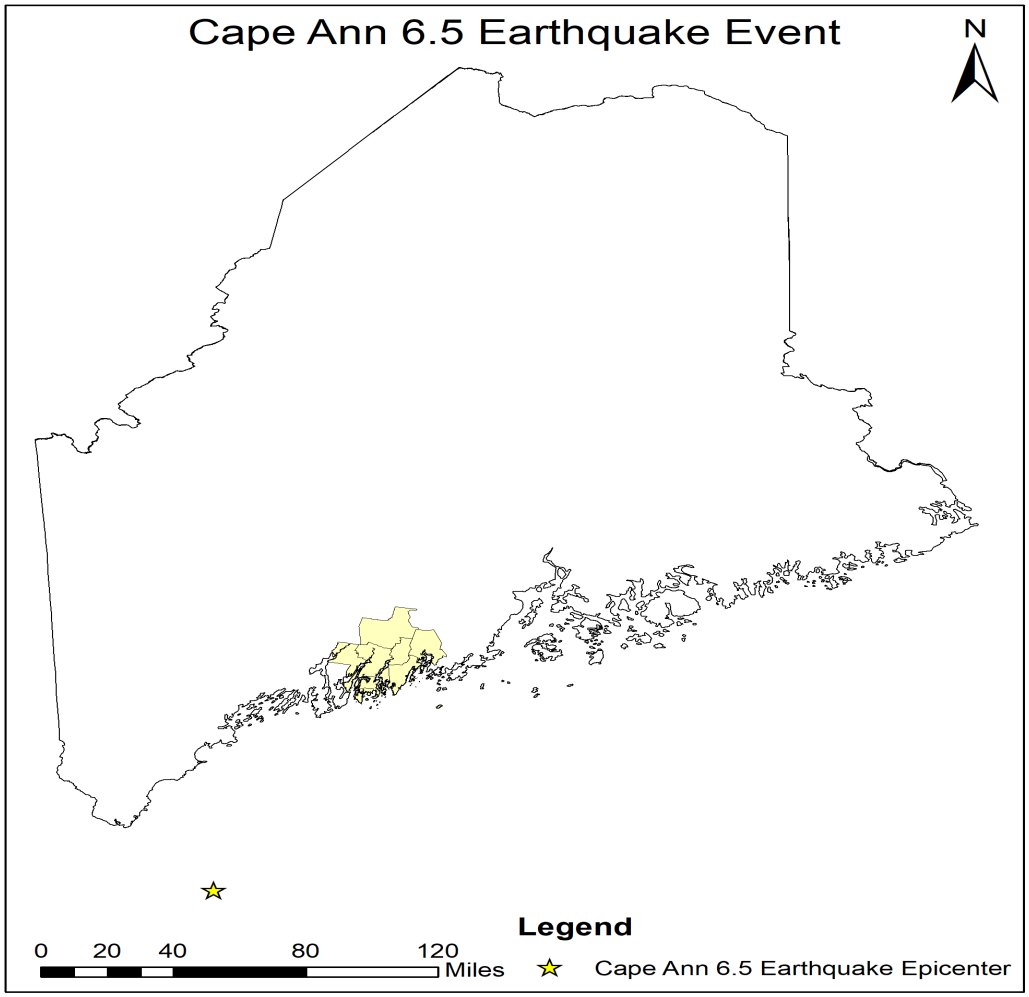
Table 1: Direct Economic Losses for Buildings
Table 2: Direct Economic Losses for Transportation
Table 3: Direct Economic Losses for Utilities
Table 4: Utility System Damage and Performance
Table 5: Hospital Functionality
Table 6: School Functionality
Table 7: Emergency Operations Center (EOC's) Functionality
Table 8: Police Station Functionality
Table 9: Fire Station Functionality
Table 10: Casualties Summary Report
Table 11: Shelter Summary Report
Table 12: Debris Summary Report

APPENDICES

Appendix A: USGS Earthquake Hazard Map
Appendix B: Earthquake History of Maine
Appendix C: New England Scenario Earthquakes to be used in HAZUS

Earthquake Scenario

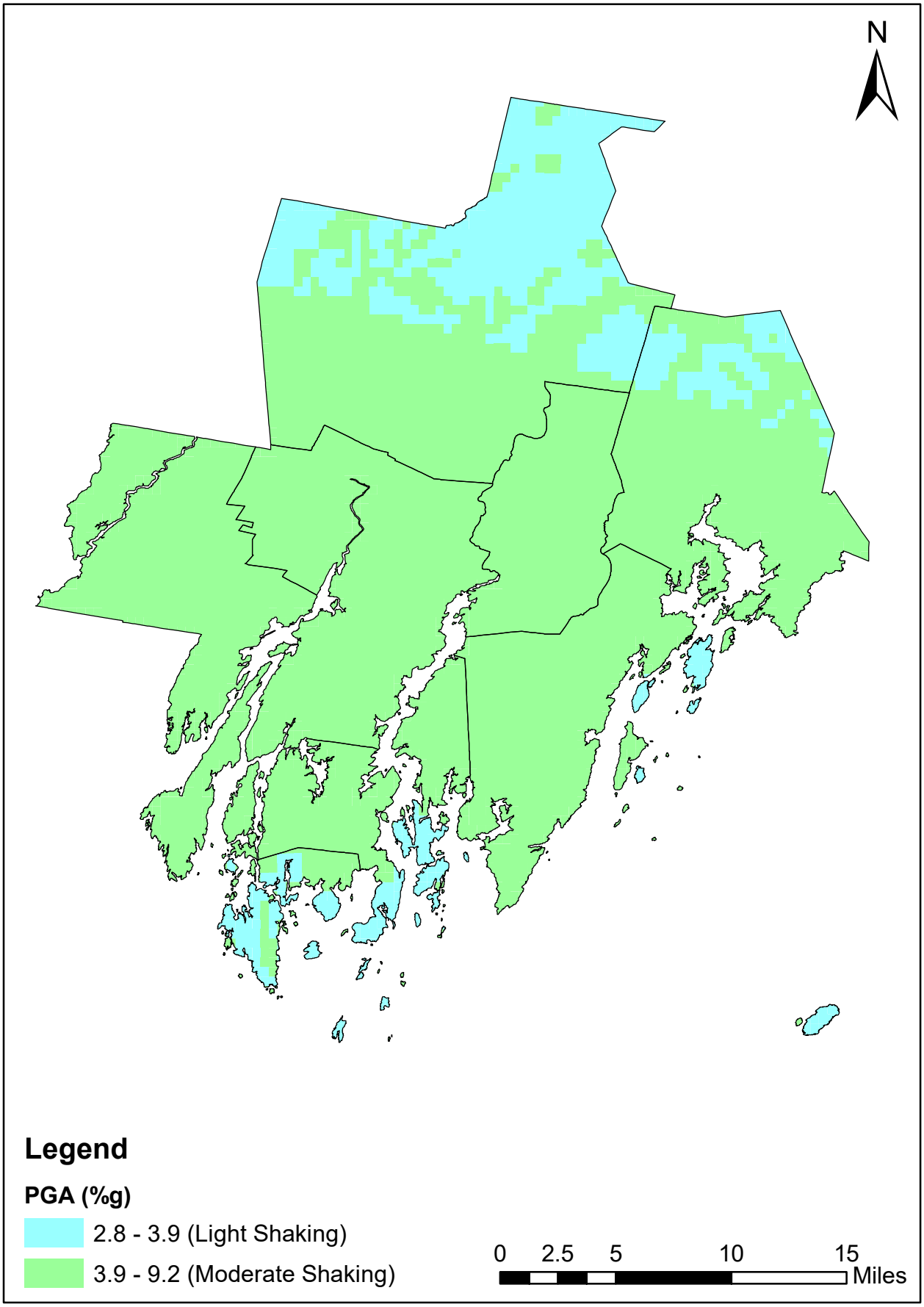
Hazus uses the following set of information to define the earthquake parameters used for the earthquake loss estimate provided in this report.



Scenario Name	Cape Ann 6.5
Type of Earthquake	Arbitrary
Fault Name	NA
Historical Epicenter ID #	NA
Probabilistic Return Period	NA
Longitude of Epicenter	-70.30
Latitude of Epicenter	42.70
Earthquake Magnitude	6.50
Depth (km)	5.00
Rupture Length (Km)	NA
Rupture Orientation (degrees)	NA
Attenuation Function	Central & East US (CEUS 2008)

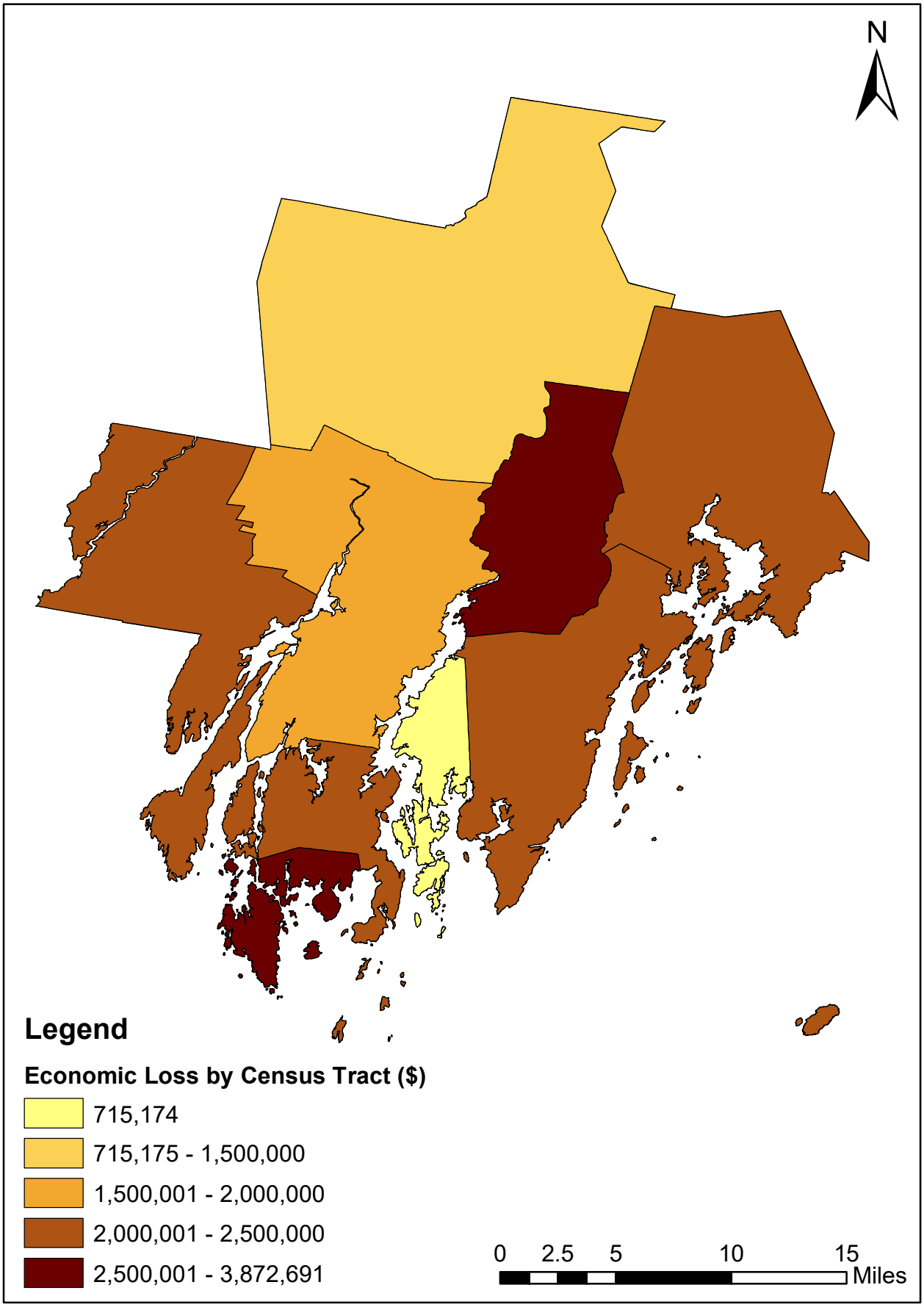
Earthquake Ground Shaking
Cape Ann 6.5 Earthquake Event
Lincoln County, Maine

Figure 2



Economic Losses for Buildings
Cape Ann 6.5 Earthquake Event
Lincoln County, Maine

Figure 3



Highway Bridges Functionality
Cape Ann 6.5 Earthquake Event
Lincoln County, Maine

Figure 4

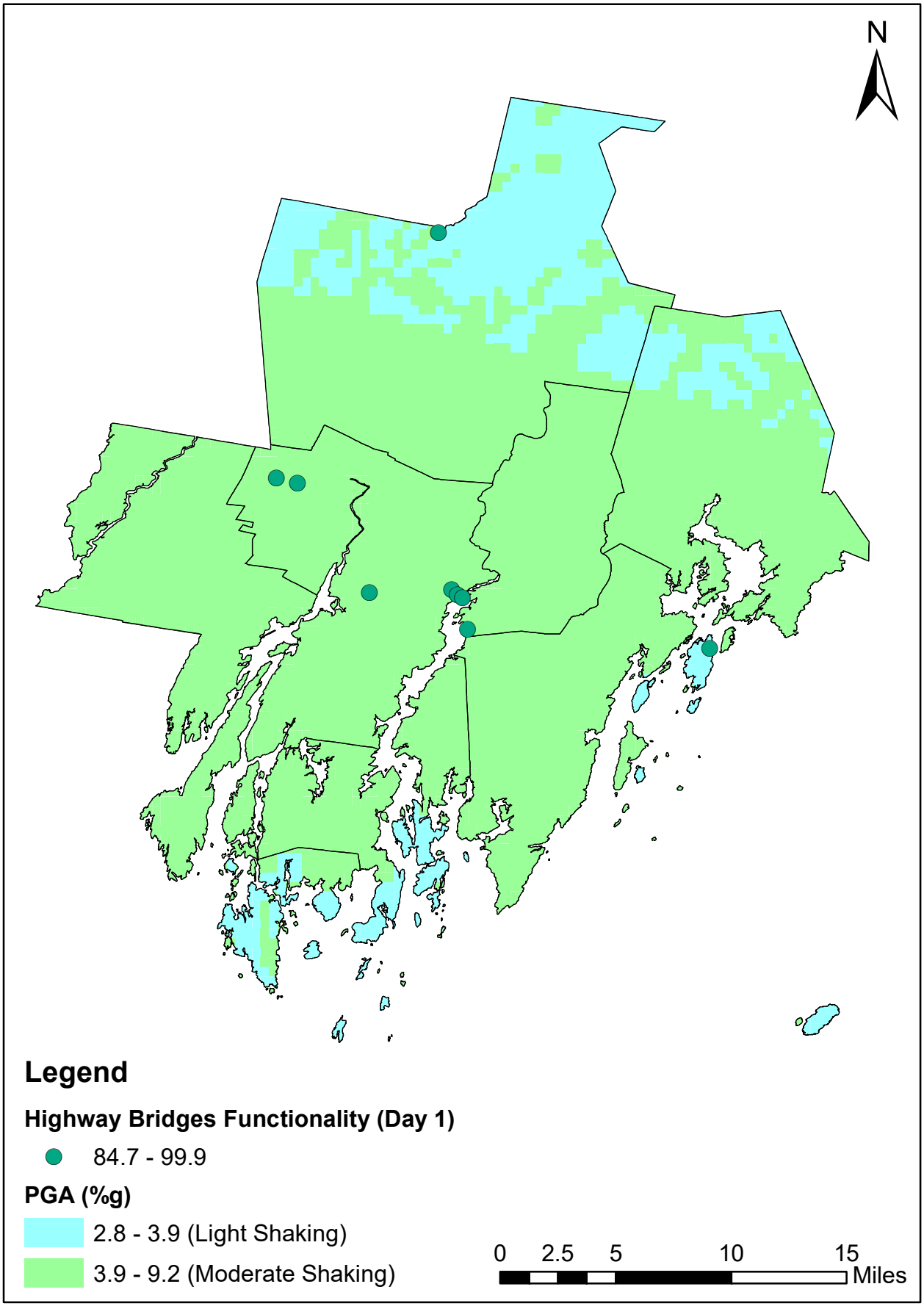
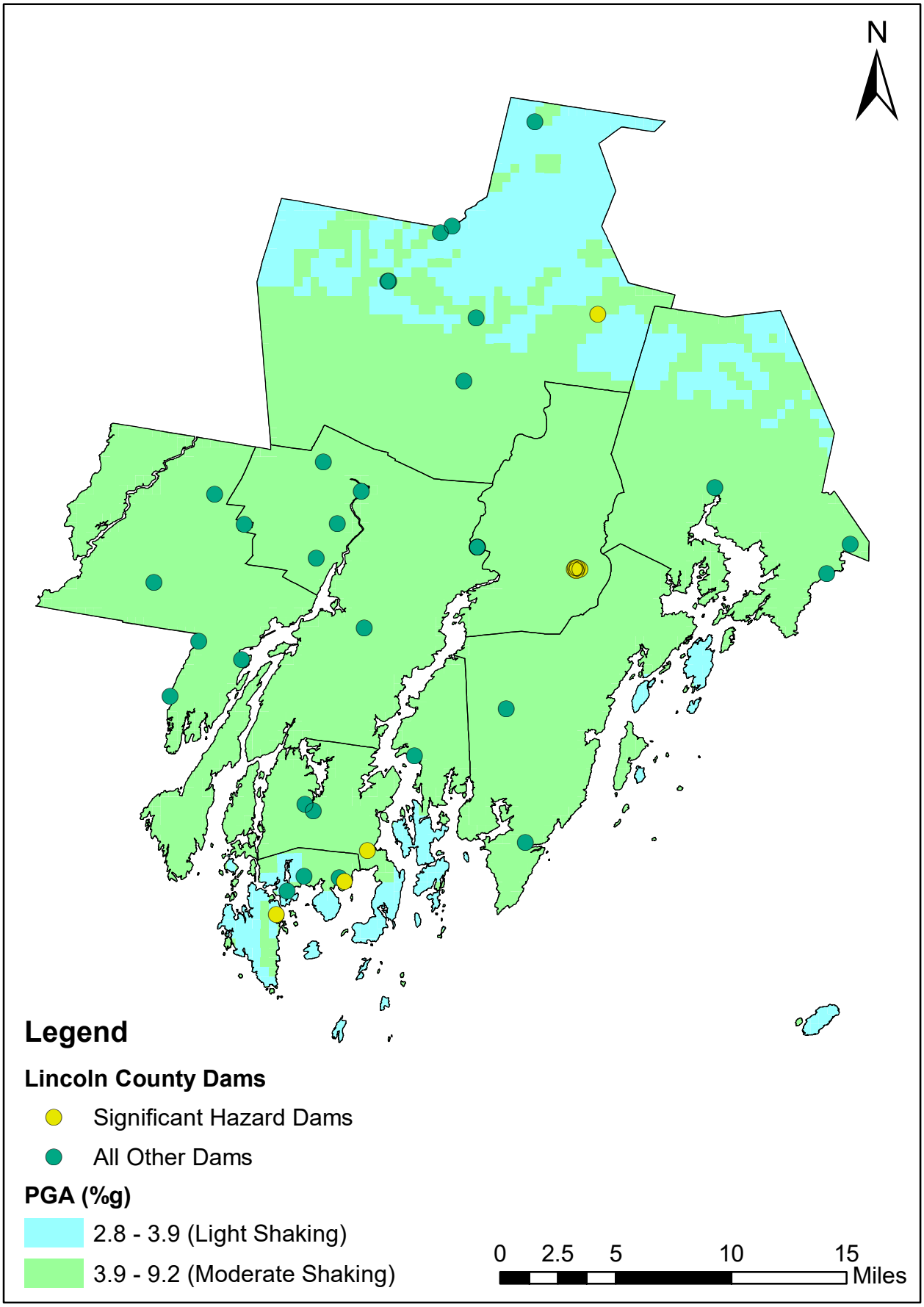


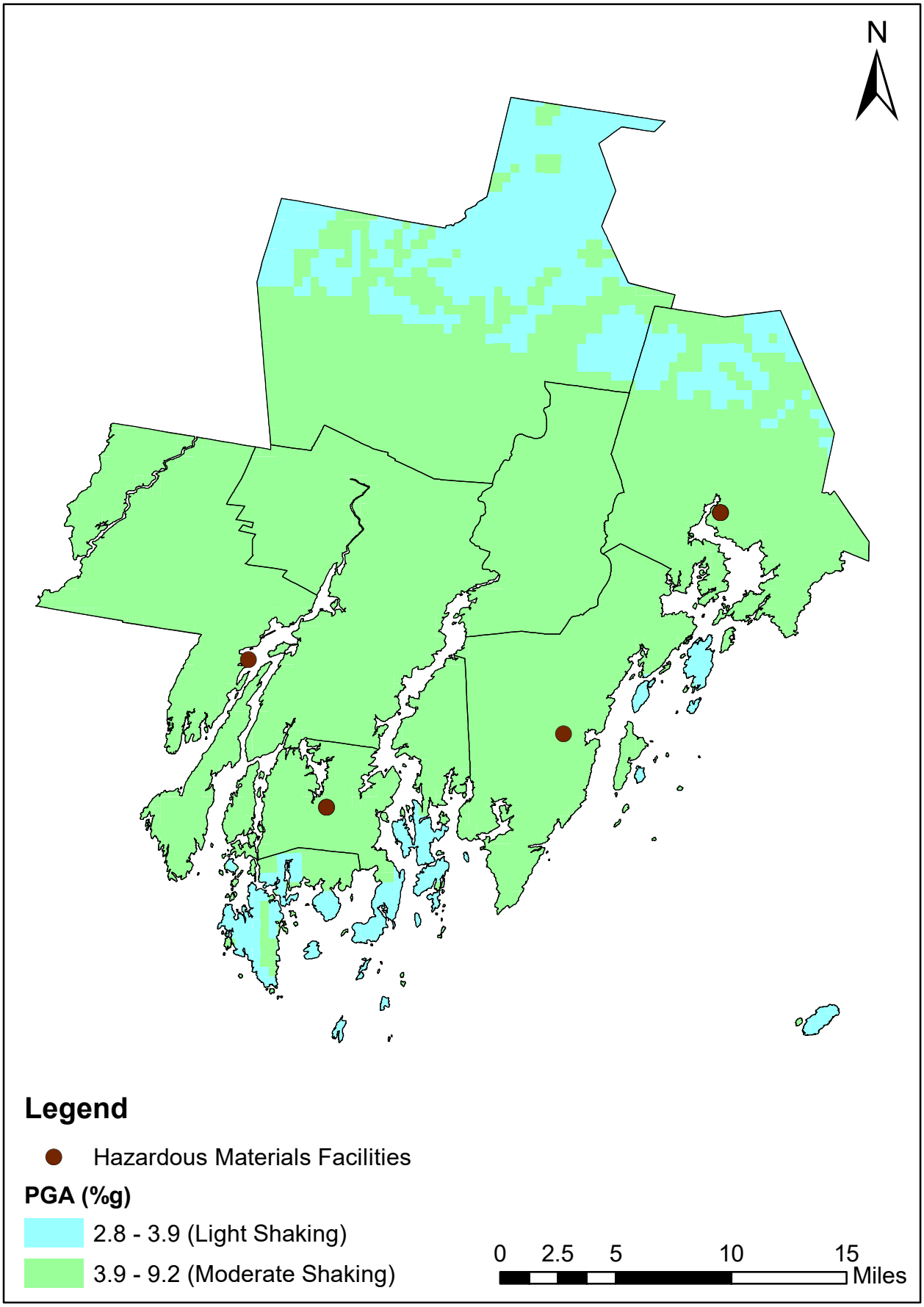
Figure 5

Dams of Lincoln County, Maine
Cape Ann 6.5 Earthquake Event



Hazardous Materials Facilities
Cape Ann 6.5 Earthquake Event
Lincoln County, Maine

Figure 6



Direct Economic Losses For Buildings

November 29, 2018

All values are in thousands of dollars

	Capital Stock Losses					Income Losses				
	Cost Structural Damage	Cost Non-struct. Damage	Cost Contents Damage	Inventory Loss	Loss Ratio %	Relocation Loss	Capital Related Loss	Wages Losses	Rental Income Loss	Total Loss
Maine										
Lincoln	3,148	8,895	2,144	61	0.23	1,959	1,195	1,669	1,330	20,401
Total	**3,148**	**8,895**	**2,144**	**61**	**0.23**	**1,959**	**1,195**	**1,669**	**1,330**	**20,401**
Region Total	**3,148**	**8,895**	**2,144**	**61**	**0.23**	**1,959**	**1,195**	**1,669**	**1,330**	**20,401**

Totals only reflect data for those census tracts/blocks included in the user's study region and will reflect the entire county/state only if all of the census blocks for that county/states were selected at the time of study region creation.

Study Region : LincolnCty_EQ_FL

Scenario : Cape Ann 6.5

Direct Economic Loss For Transportation

November 29, 2018

All values are in thousands of dollars

	Highway	Railway	Light Rail	Bus Facility	Ports	Ferries	Airport	Total
Maine								
Lincoln								
Segments	0	0	0					0
Bridges	1,622	0	0					1,622
Tunnels	0	0	0					0
Facilities		0	0	0	0	67	227	294
Total	**1,622**	**0**	**0**	**0**	**0**	**67**	**227**	**1,916**
Total	**1,622**	**0**	**0**	**0**	**0**	**67**	**227**	**1,916**
Region Total	**1,622**	**0**	**0**	**0**	**0**	**67**	**227**	**1,916**

Totals only reflect data for those census tracts/blocks included in the user's study region and will reflect the entire county/state only if all of the census blocks for that county/states were selected at the time of study region creation.

Direct Economic Loss For Utilities

November 29, 2018

All values are in thousands of dollars

	Potable Water	Waste Water	Oil Systems	Natural Gas	Electric Power	Communication	Total
Maine							
Lincoln							
Facilities	0	679	0	0	936	0	1,615
Pipelines	369	185	0	64			618
Total	369	864	0	64	936	0	2,233
Total	**369**	**864**	**0**	**64**	**936**	**0**	**2,233**
Region Total	**369**	**864**	**0**	**64**	**936**	**0**	**2,233**

Totals only reflect data for those census tracts/blocks included in the user's study region and will reflect the entire county/state only if all of the census blocks for that county/states were selected at the time of study region creation.

Table 4

Expected Utility System Facility Damage

System	# of Locations				
	Total #	With at Least Moderate Damage	With Complete Damage	with Functionality > 50 %	
				After Day 1	After Day 7
Potable Water	0	0	0	0	0
Waste Water	5	0	0	5	5
Natural Gas	0	0	0	0	0
Oil Systems	0	0	0	0	0
Electrical Power	3	0	0	3	3
Communication	1	0	0	1	1

Expected Utility System Pipeline Damage (Site Specific)

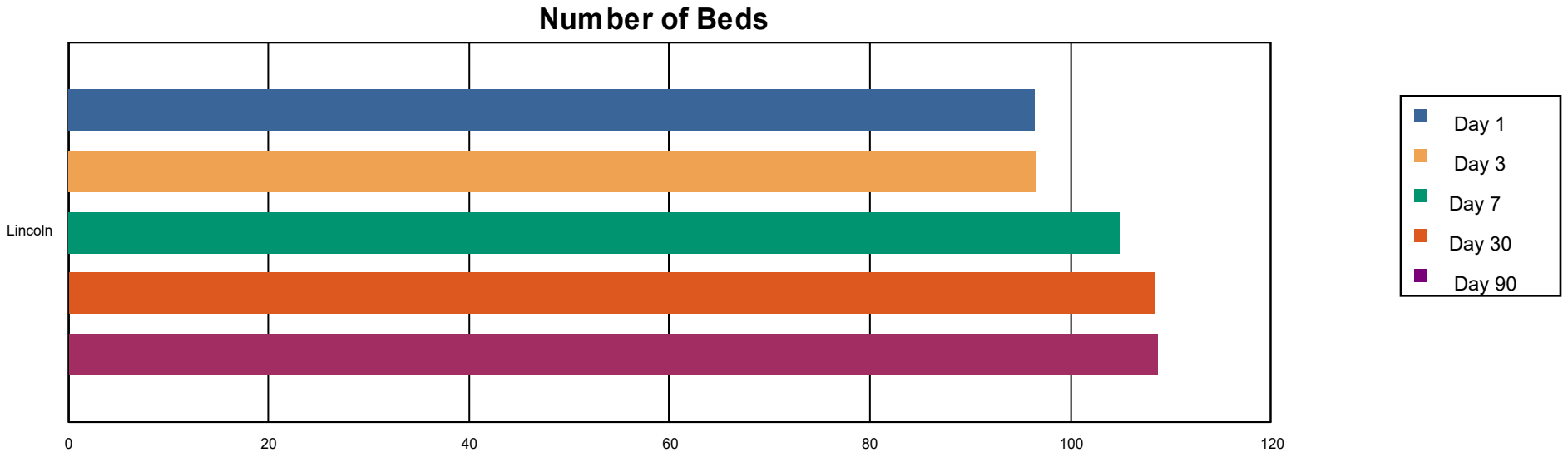
System	Total Pipelines Length (miles)	Number of Leaks	Number of Breaks
Potable Water	2,763	82	21
Waste Water	1,658	41	10
Natural Gas	1,105	14	4
Oil	0	0	0

Expected Potable Water and Electric Power System Performance

	Total # of Households	Number of Households without Service				
		At Day 1	At Day 3	At Day 7	At Day 30	At Day 90
Potable Water	15,149	0	0	0	0	0
Electric Power		0	0	0	0	0

Hospital Functionality

November 29, 2018



	Total # of Beds	At Day 1		At day 3		At day 7		At day 30		At day 90	
		# of Beds	%	# of Beds	%	# of Beds	%	# of Beds	%	# of Beds	%
Maine											
Lincoln											
Medium Hospital	71	62	87.10	62	87.20	67	93.80	70	99.00	71	99.40
Small Hospital	38	34	89.80	34	90.00	38	98.70	38	99.90	38	99.90
Total	**109**	**96**	**88.50**	**97**	**88.60**	**105**	**96.30**	**108**	**99.50**	**109**	**99.70**

School Functionality

November 29, 2018

	Count	Functionality (%)
Maine		
Lincoln	25	80.80
Total	**25**	**80.80**
Region Total	**25**	**80.80**

Totals only reflect data for those census tracts/blocks included in the user's study region and will reflect the entire county/state only if all of the census blocks for that county/states were selected at the time of study region creation.

Emergency Operation Center Functionality

November 29, 2018

	Count	Functionality (%)
Maine		
Lincoln	1	88.00
Total	**1**	**88.00**
Region Total	**1**	**88.00**

Totals only reflect data for those census tracts/blocks included in the user's study region and will reflect the entire county/state only if all of the census blocks for that county/states were selected at the time of study region creation.

Police Station Facilities Functionality

November 29, 2018

	Count	Functionality(%) At Day 1
Maine		
Lincoln	5	88.60
Total	**5**	**88.60**
Region Total	**5**	**88.60**

Totals only reflect data for those census tracts/blocks included in the user's study region and will reflect the entire county/state only if all of the census blocks for that county/states were selected at the time of study region creation.

Fire Station Facilities Functionality

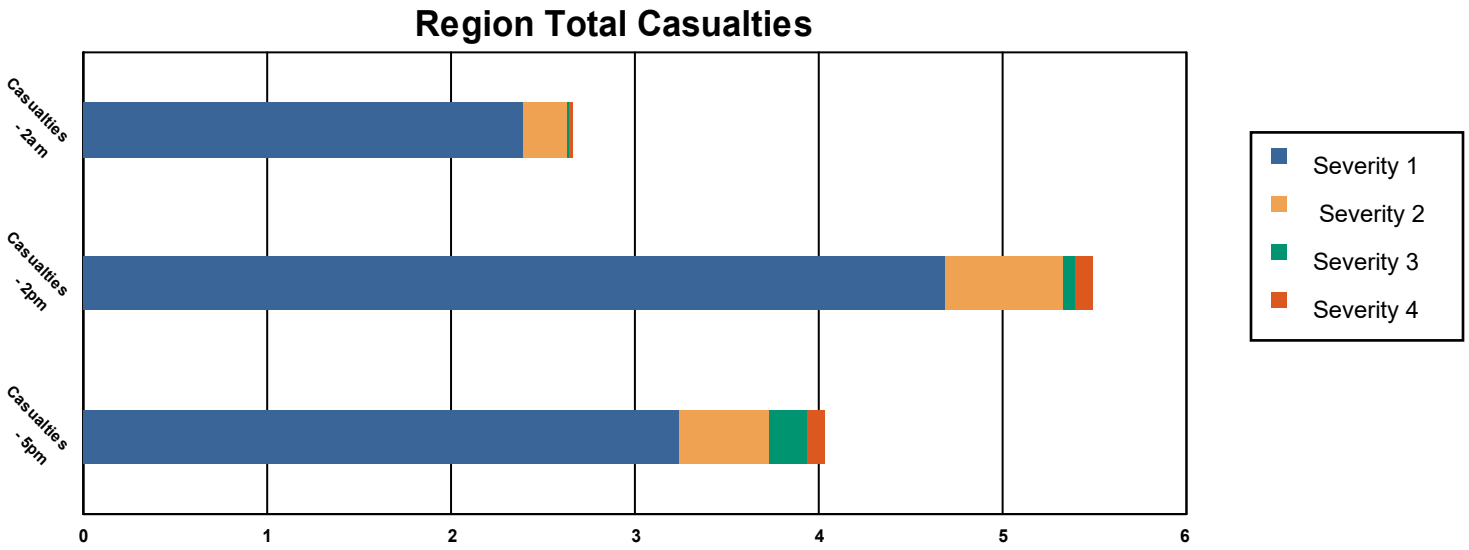
November 29, 2018

	Count	Functionality(%) At Day 1
Maine		
Lincoln	28	90.20
Total	**28**	**90.20**
Region Total	**28**	**90.20**

Totals only reflect data for those census tracts/blocks included in the user's study region and will reflect the entire county/state only if all of the census blocks for that county/states were selected at the time of study region creation.

Casualties Summary Report

November 29, 2018



	Injury Severity Level				
	Severity 1	Severity 2	Severity 3	Severity 4	Total
Maine					
Lincoln					
Casualties - 2am					
Commuting	0	0	0	0	0
Commercial	0	0	0	0	0
Educational	0	0	0	0	0
Hotels	0	0	0	0	0
Industrial	0	0	0	0	0
Other-Residential	1	0	0	0	1
Single Family	1	1	0	0	2
Total Casualties - 2am	**2**	**1**	**0**	**0**	**3**
Casualties - 2pm					
Commuting	0	0	0	0	0
Commercial	3	0	0	0	3
Educational	1	0	0	0	1
Hotels	0	0	0	0	0
Industrial	1	0	0	0	1
Other-Residential	0	0	0	0	0
Single Family	0	1	0	0	1

	Injury Severity Level				
	Severity 1	Severity 2	Severity 3	Severity 4	Total
Maine					
Lincoln					
Total Casualties - 2pm	**5**	**1**	**0**	**0**	**6**
Casualties - 5pm					
Commuting	0	0	0	0	0
Commercial	2	0	0	0	2
Educational	0	0	0	0	0
Hotels	0	0	0	0	0
Industrial	0	0	0	0	0
Other-Residential	1	0	0	0	1
Single Family	0	1	0	0	1
Total Casualties - 5pm	**3**	**0**	**0**	**0**	**4**
Region Total	NA	NA	NA	NA	NA

Totals only reflect data for those census tracts/blocks included in the user's study region and will reflect the entire county/state only if all of the census blocks for that county/states were selected at the time of study region creation.

Shelter Summary Report

November 29, 2018

	# of Displaced Households	# of People Needing Short Term Shelter
Maine		
Lincoln	7	4
Total	**7**	**4**
Region Total	**7**	**4**

Totals only reflect data for those census tracts/blocks included in the user's study region and will reflect the entire county/state only if all of the census blocks for that county/states were selected at the time of study region creation.

Study Region : LincolnCty_EQ_FL

Scenario : Cape Ann 6.5

Debris Summary Report

November 29, 2018

All values are in thousands of tons.

	Brick, Wood & Others	Concrete & Steel	Total
Maine			
Lincoln	4	2	6
Total	**4**	**2**	**6**
Region Total	**4**	**2**	**6**

Totals only reflect data for those census tracts/blocks included in the user's study region and will reflect the entire county/state only if all of the census blocks for that county/states were selected at the time of study region creation.

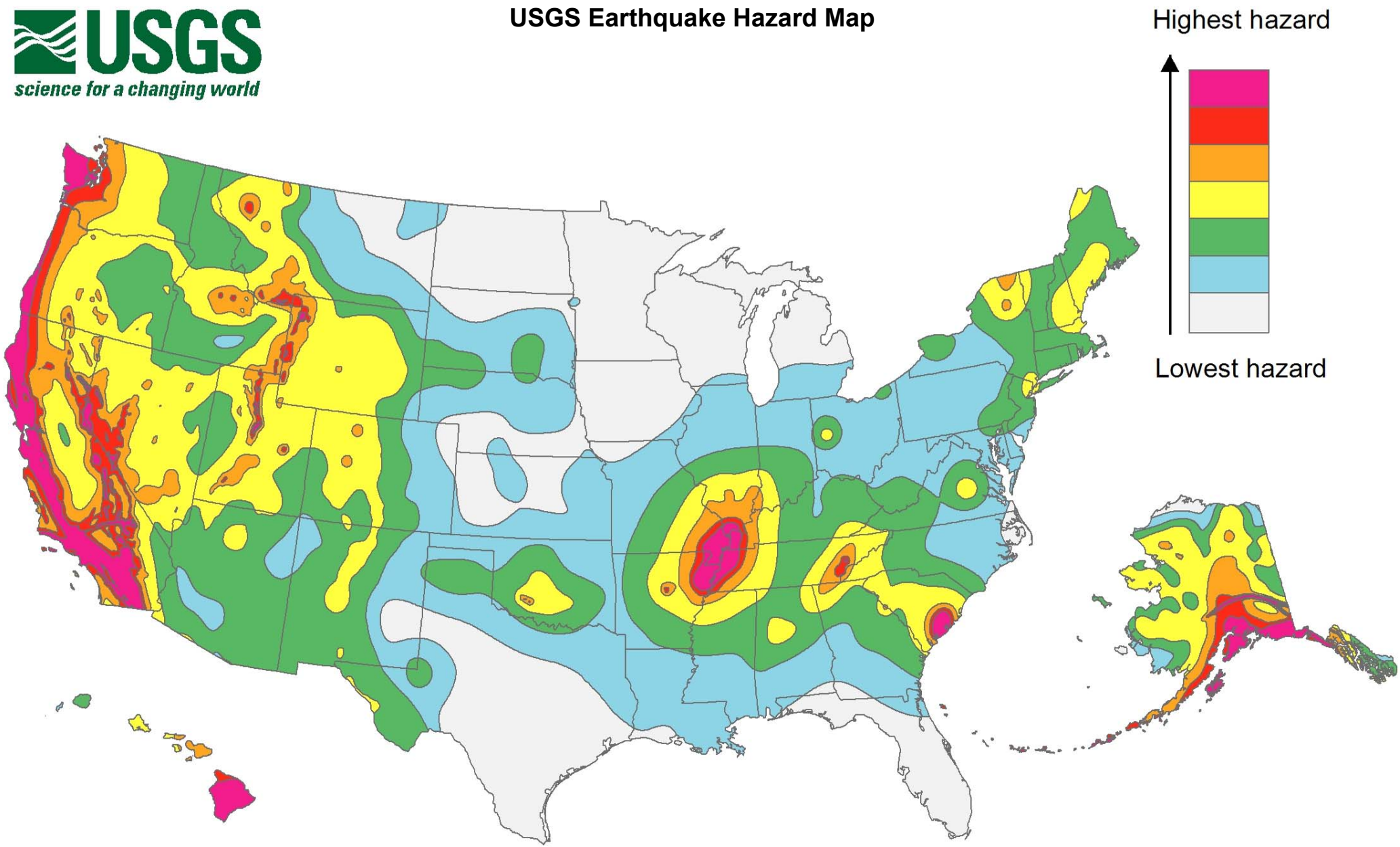
Study Region : LincolnCty_EQ_FL

Scenario : Cape Ann 6.5

Appendix A

USGS
science for a changing world

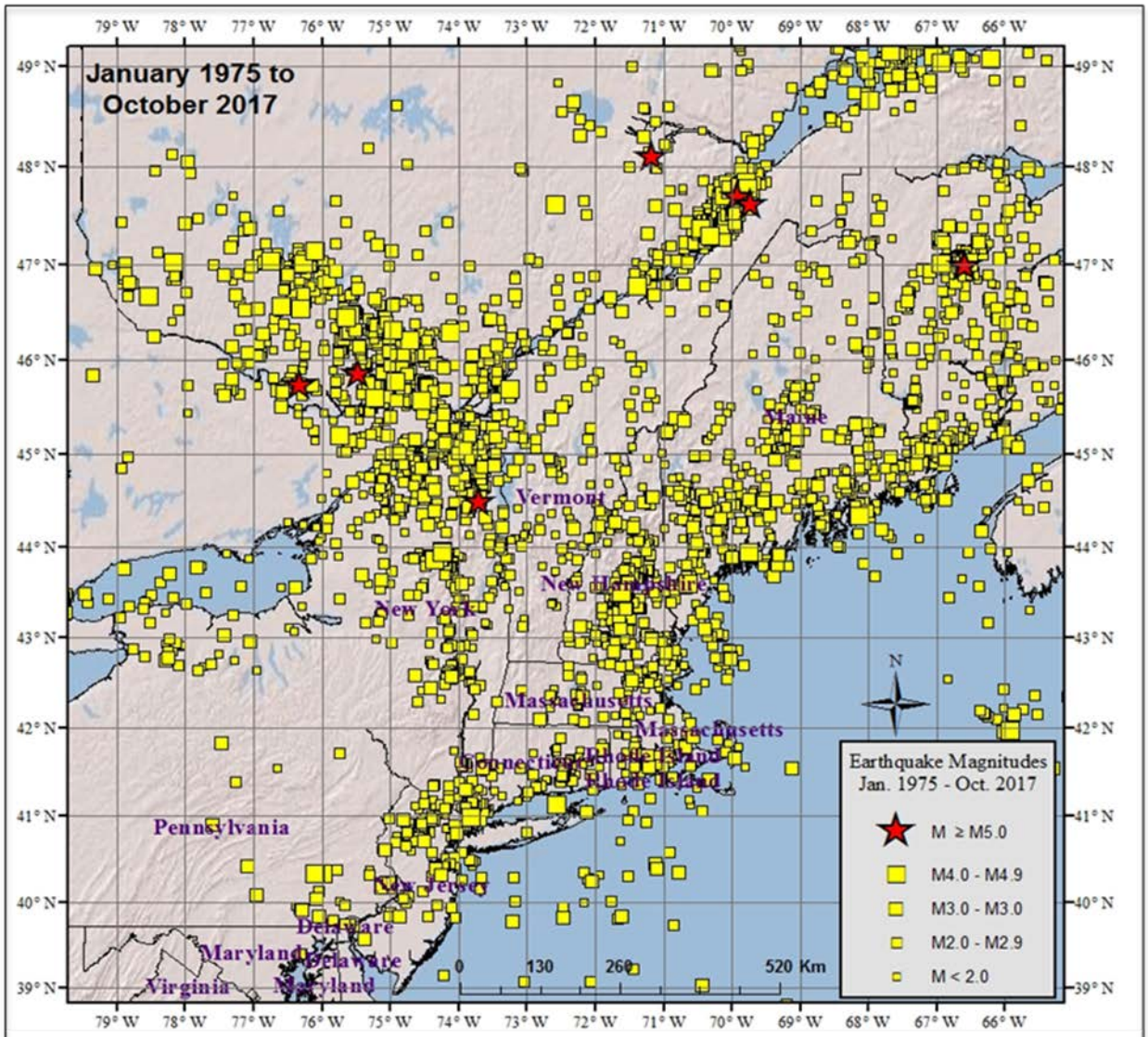
USGS Earthquake Hazard Map



NESEC
Northeast States Emergency Consortium
www.nesec.org

Earthquake History of Maine

Although European missionaries and colonists began establishing settlements in Maine in the 1600s, the first earthquake likely centered in Maine was not recorded until January 23, 1766 when a small shake was reported felt in Portland. Through 2016 over 450 felt earthquakes are known to have been centered somewhere in Maine, with earthquake epicenters in almost all parts of the state. The first significant earthquake in Maine occurred on May 22, 1817 when the central and eastern parts of the state were rocked by a strong shake. This earthquake, also felt strongly in eastern New Brunswick, is thought to have been about magnitude 4.5 to 5.0 and to have been centered somewhere in the area of Passamaquoddy Bay. Another widely felt earthquake took place on January 16, 1855.



Map of Earthquakes of the Northeastern US and Southeastern Canada 1975 to 2017

This seismic event was felt throughout western Maine and New Hampshire, with an estimated epicenter somewhere near Otisfield, Maine and a magnitude about 5.0. It reportedly moved objects on shelves and rang bells in the epicentral area. On December 23, 1857, an earthquake was felt throughout southcentral Maine and caused some minor damage to plaster and a few chimneys at Lewiston. The epicenter was probably somewhere west of Lewiston, and the magnitude of the event was about 4.5.

The strongest known earthquake centered in the state of Maine occurred on March 21, 1904. With an epicenter somewhere between Bar Harbor and Passamaquoddy Bay, this earthquake was felt from Nova Scotia to Vermont and Connecticut and had an estimated magnitude of about .5.9. Damage to chimneys and masonry walls was reported at a number of towns in eastern Maine as well as at towns around Passamaquoddy Bay in New Brunswick. On July 15, 1905, an earthquake of estimated magnitude 4.5 was felt from southern New Hampshire to central Maine. The epicenter of this event is thought to have been near Sabbatus. An earthquake of similar magnitude struck southern Maine on August 21, 1918. The epicenter is thought to have been somewhere near Bridgeton and Norway. Starting on February 8, 1928 with an event of magnitude about 4.5, a swarm of earthquakes was felt in central Maine at the towns of Milo and Dover-Foxcroft. The swarm lasted several days. Another earthquake shock of about magnitude 4.3 centered in this same area took place on January 14, 1943. On April 26, 1957, there was an earthquake of about magnitude 3.8 that was centered just east of Portland, which did some minor damage in that city and nearby towns.

Number of Felt Earthquakes in the Northeast States

State	Years of Earthquake Record	Number of Felt Earthquakes	Years with Damaging Earthquakes
Connecticut	1678-2016	115	1791
Maine	1766-2016	454	1973, 1904
Massachusetts	1668-2016	408	1727, 1755
New Hampshire	1638-2016	320	1638, 1940
New Jersey	1738-2016	98	1884
New York	1737-2016	551	1737, 1929, 1944, 1983, 2002
Rhode Island	1766-2016	34	
Vermont	1843-2016	50	
Total Number of Felt Earthquakes		2030	

Even in more recent times, Maine has experienced notable earthquakes. On June 14, 1973, a magnitude 4.7 earthquake was centered at the Maine-New Hampshire-Quebec border region. It caused some minor damage near its epicenter and was felt throughout all of New England and eastern New York. On October 2, 2006, a magnitude 4.2 earthquake was centered at Bar Harbor. This event, which was felt throughout southern and central Maine, caused several rock falls in Acadia National

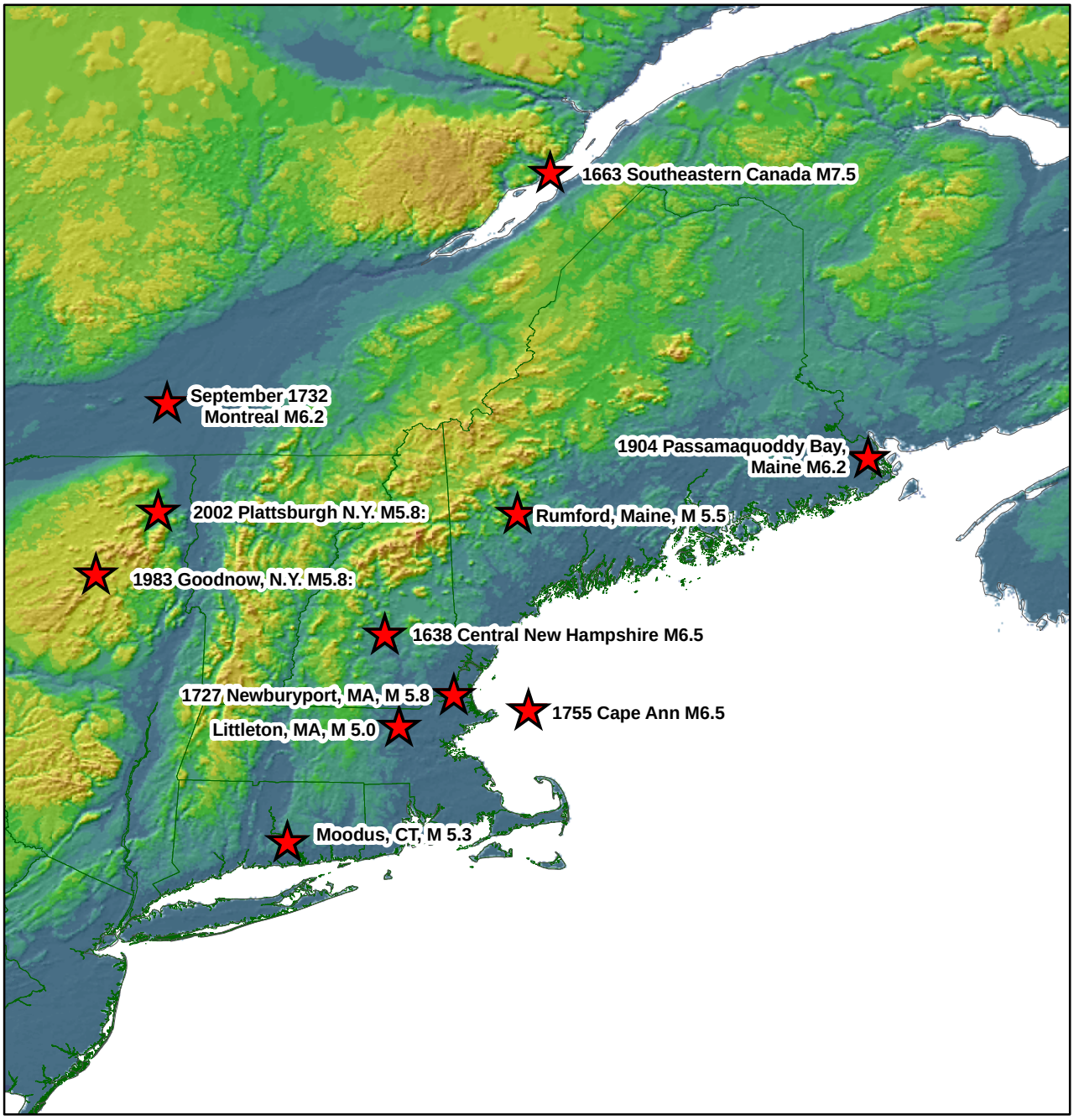
Park, which blocked a couple of roads and damaged some hiking trails. On October 16, 2012, a magnitude 4.0 earthquake centered near Hollis Center was felt from Bangor to Connecticut.

Earthquakes Outside of Maine Having Notable State Impacts

Several strong earthquakes centered outside of Maine have had notable impacts in the state. The October 29, 1727 magnitude 5.6 earthquake at Newbury, MA was felt throughout the coastal communities of Maine. The November 18, 1755 magnitude 6.2 earthquake, which likely had an epicenter east of Cape Ann, MA, damaged chimneys along south coastal Maine from the New Hampshire border to Portland. Strong earthquakes in the Charlevoix seismic zone in Quebec on October 17, 1860 (magnitude 6.0), October 20, 1870 (magnitude 5.9) and March 1, 1925 (magnitude 6.2) cracked some plaster and chimneys in the northern part of the state, and all three events were felt throughout Maine. On October 22, 1869, a strong earthquake with a magnitude about 5.9 centered in New Brunswick was felt strongly throughout the state of Maine. The November 18, 1929 magnitude 7.2 earthquake that was centered south of Newfoundland and that caused a damaging tsunami there was also felt throughout Maine. A magnitude 5.8 earthquake on January 9, 1982 from central New Brunswick caused some minor damage in towns in northeastern Maine, and a magnitude 5.9 earthquake on November 25, 1988 centered north of Quebec City caused very minor damage in northernmost Maine. Both of these earthquakes were felt throughout the state.

Appendix C

New England Scenario Earthquakes To Be Used in HAZUS



ARTICLE III. DISORDERLY PROPERTY

Sec. 11.5-61. Purpose.

The purpose of this article is to protect the health, safety, and welfare of the residents of the Town of Brunswick by eliminating the proliferation of properties harboring occupants who disturb the peace and tranquility of their neighborhoods.

(Ord. of 10-20-08(1), § 1)

Sec. 11.5-62. Legislative findings.

The town council hereby finds that:

(1) The town has a substantial and compelling interest in protecting the health, safety, property, and welfare of its citizens and the neighborhoods affected by chronic unlawful or nuisance activity.

(2) Chronic unlawful or nuisance activity of various kinds on and near disorderly properties adversely affects the health, safety and welfare of citizens and diminishes the quality of life in neighborhoods where this chronic activity occurs. Chronic unlawful or nuisance activity constitutes a public nuisance and should be subject to abatement.

(3) The existing ordinances and enforcement processes do not adequately control chronic unlawful or nuisance activity or its detrimental effects on citizens and neighborhoods where such chronic activity occurs.

(4) Establishing the regulatory scheme contained herein will alleviate the problems created by chronic unlawful or nuisance activity through early intervention by the chief of police.

(Ord. of 10-20-08(1), § 2)

Sec. 11.5-63. Scope.

This article shall apply to the owner(s) of all residential property, as defined in Section 11.5-64, located in the Town of Brunswick.

(Ord. of 10-20-08(1), § 3)

Sec. 11.5-64. Definitions.

Disorderly activities means situations created, originating, or conducted within a building or within the boundaries of the property on which a building is located by the owner, occupants, tenants, or customers thereof, or the visitors to any such owner, occupant, tenant, or customer, which would unreasonably disturb the community, the neighborhood, or an ordinary individual of normal sensitivities at or beyond the property line, including but not limited to:

(1) Loud music;

(2) Boisterous gatherings;

(3) Excessive, loud or unnecessary noises audible beyond the property line;

(4) Altercations occurring on the property, such as fighting, disorderly conduct, brawling or similar activities; or

(5) Other similar activities occurring within or outside any building located on the property.

Disorderly event means any twenty-four-hour period commencing at noon and ending at noon on the following day during which a police officer observes or the police department receives one (1) or more complaints of a disorderly activity to which the police department responds and substantiates that a disorderly activity has occurred as outlined in Section 11.5-67 of this article. The police chief shall have sole discretion in determining whether a disorderly event has occurred.

Disorderly event notice means a document summarizing the findings of the officer investigating a complaint or the officer's observations. The notice shall contain the time, the property identification, the identification of the officer, basis of the complaint or observations, citation of this article and identification of the provisions violated and other items deemed appropriate by the police chief.

Disorderly property means any residential property for which the police chief has notified the owner that the police department has documented and substantiated two (2) or more disorderly events within two hundred and seventy (270) days.

Owner means any person, including any legal entity, having the right of legal title or the beneficial interest in a residential property or any portion thereof, as that interest is recorded in the tax records of the Town of Brunswick or the Registry of Deeds of Cumberland County.

Police chief means the Chief of Police of the Town of Brunswick or other official of the police department as may be designated by the chief.

Residential property means:

(1) Lot(s), plot(s), or parcel(s) of land on which a residential building(s) or a building(s) of mixed occupancy is located;

(2) Residential building(s), including one-family dwelling(s), multiple-family dwelling(s), and rooming houses or boarding houses;

(3) Residential occupancies in building(s) of mixed occupancy;

(4) For the purpose hereof, a mixed occupancy building means a building used for any purpose that also contains a residential occupancy therein.

(Ord. of 10-20-08(1), § 4; Ord. of 4-3-17(2))

Sec. 11.5-65. Declaration of public nuisance.

(a) A disorderly property is hereby declared to be a public nuisance.

(b) The owner of a residential property shall provide sufficient control, oversight, monitoring, and management of the property to prevent the same from becoming a disorderly property.

(c) The owner of a disorderly property shall be responsible for taking all necessary measures to abate or eliminate the public nuisance.

(Ord. of 10-20-08(1), § 5)

Sec. 11.5-66. Disorderly property prohibited.

No owner of residential property shall maintain, or allow to be maintained or to exist on the owner's property, a disorderly property as defined in this article. Each and every day that a disorderly event shall be permitted to occur on the property after it becomes classified by the chief of police as a disorderly property shall constitute a separate offense.

(Ord. of 10-20-08(1), § 6)

Sec. 11.5-67. Documentation and substantiation of complaints.

The police department shall document all responses to observations or complaints of a disturbance or disorderly activities. In the absence of a complaint, an officer may investigate a disorderly activity based upon the officer's own independent observation. The officer(s) responding to a disturbance complaint or the officer's own observation shall, at the officer's sole discretion, classify each incident as either a substantiated disorderly activity or as an unsubstantiated complaint or observation. The officer(s) shall identify all properties that are the object of the complaint or observation. The officer shall issue a verbal and/or written warning to any person observed by the officer to be present at the property that is the object of the complaint or observation advising them to cease any further disorderly activity on the property. The responding officer(s) need not identify a single individual associated with the complaint or observation at the property.

(Ord. of 10-20-08(1), § 7)

Sec. 11.5-68. Notice of disorderly events or disorderly property.

Whenever the police chief determines that a disorderly event has occurred, the police chief shall notify the owner of the property as to the chief's findings according to the number and frequency of prior disorderly events, if any, as provided below. In the event of a complaint or report of disorderly activities involving housing owned or leased by an institution with a full time security department, which institution has a mechanism in place to administer and respond to complaints that is reasonably satisfactory to the chief of police, the chief of police may refer the complaint to such institution's security department for resolution on a case by case basis. In such cases, the chief of police shall take no further action unless the chief of police determines that the institution has not taken adequate steps to respond to such complaint, in which case the chief of police shall follow the procedures set forth in this article. In the event the chief of police determines at any time that the institution's mechanism to administer and respond to complaints is no longer reasonably satisfactory in the sole judgment of the chief of police, the provisions of this article shall thereafter apply to all disorderly activities involving housing owned or leased by such institution.

(1) *First disorderly event.* At the earliest time possible, but within not more than seven (7) days after the first disorderly event at a property, the police chief shall serve the owner with a copy of this article and a disorderly event notice advising the owner that the police department has documented the occurrence of a disorderly event at the owner's property. Copies of the disorderly event notice shall be provided to any tenant(s) of dwelling units associated with the disorderly event, town council members, the town manager, code enforcement officer, and the fire chief. The notice shall also advise the owner what subsequent events will result in the property being classified as a disorderly property, and warn the owner that failure to prevent the property from becoming a disorderly property will constitute a violation of this article.

(2) *Second disorderly event.* At the earliest time possible, but within not more than seven (7) days after the second disorderly event at a property, the police chief shall serve the owner with a copy of this article and a disorderly event notice advising the owner that the police department has documented a second

disorderly event at the owner's property. In the event that the property has accumulated at this time two (2) disorderly events within a two-hundred-seventy-day period, the police chief shall further notify the owner that the property has been classified as a disorderly property and that the owner is in violation of this article and is subject to a remediation process as set forth in Section 11.5-70 of this article. Copies of the disorderly event notice shall be provided to any tenant(s) of dwelling units associated with the disorderly event, town council members, the town manager, code enforcement officer, and the fire chief.

(3) *Method of service.* For the purposes of this section, notices to the owner shall be served simultaneously in two (2) ways:

a. By certified mail, with address correction and return receipt requested; and

b. By first class mail with address correction requested.

For the purposes of this section, a mailing to the owner at the address maintained in the records of the assessor shall constitute adequate notice. Service may also be made by any alternative method authorized by state law or the Maine Rules of Civil Procedure. If the owner has provided the police chief or town clerk with written notification of the name and address of a duly authorized agent, notice may be served on the agent.

(Ord. of 10-20-08(1), § 8; Ord. of 4-3-17(2))

Sec. 11.5-69. Appeal process.

The owner of property that has been classified as a disorderly property by the police chief may appeal such classification in writing to the town manager within fourteen (14) days of such classification. In the event of a timely appeal, the town manager will provide the property owner and the police chief with seven (7) days notice of a hearing date and time. At such hearing, the property owner and the police chief shall provide the town manager with all relevant information regarding the property and the appeal. The town manager shall issue a written decision on the appeal within fourteen (14) days of the hearing.

(Ord. of 10-20-08(1), § 9)

Sec. 11.5-70. Remediation process.

Once a property has been classified as a disorderly property by the police chief, the owner shall be required to undertake a plan of remediation to abate and eliminate that public nuisance in accordance with this section.

(1) The owner, or the owner's duly authorized agent, shall meet with the police chief within fourteen (14) days of the notice of the disorderly property classification.

(2) At the time of this meeting the owner, or the owner's duly authorized agent, shall provide to the town the following documentation:

a. A list of all dwelling units and their postal or Emergency 911 address designations as they are located on the property;

b. A list of the names of all tenants and other authorized occupants of the property at the time of the disorderly property classification, and the dwelling units that they occupy.

c. A copy of the terms and conditions contained in any occupancy agreement(s) or other lease document(s) agreed to by tenants of the disorderly property (confidential personal or financial information may be omitted).

d. Documentation of any other written or verbal arrangements authorizing occupancy of the disorderly property that may exist in addition to a lease agreement.

(3) At the time of this meeting, the police chief shall provide to the owner, or the owner's duly authorized agent, a complete record of all municipal actions that involved the property in question that were taken in the three hundred sixty-day period preceding the disorderly property classification, including but not limited to records of all disorderly events, disturbance complaints, code enforcement complaints and inspections, and fire-safety inspections.

(4) Remediation agreement. At the meeting, the owner, or the owner's duly authorized agent, must agree to take effective measures to address the disorderly property, which measures must be satisfactory to the police chief and shall be memorialized in a written agreement at the conclusion of the meeting. Remedial measures identified in the agreement shall be implemented within fourteen (14) days of the meeting, and a written report describing the implementation of the remedial measures shall be submitted to the police chief within twenty-one (21) days of the meeting. The police chief and the owner, or the owner's duly authorized agent, shall sign this written agreement and copies shall be provided to the members of the town council and the town manager. In the event that the owner, or the owner's duly authorized agent, fails or refuses to enter into such a written agreement, the police chief may pursue an enforcement action as authorized under Section 11.5-73. Furthermore, in the event that the owner, or the owner's duly authorized agent, fails to:

a. Implement the remedial measures;

b. File the written report; or

c. Otherwise meet the obligations of the agreement within the applicable timetable to the satisfaction of the police chief, the chief may pursue an enforcement action under Section 11.5-73.

(5) If the owner enters into a remediation agreement acceptable to the police chief, the police chief may delay commencement of an enforcement action if, in the opinion of the police chief, the owner is making a good faith effort to implement the remediation agreement and no new disorderly event occurs on the property.

(Ord. of 10-20-08(1), § 10)

Sec. 11.5-71. Duration of disorderly property classification.

The disorderly property classification shall be removed from the property by the police chief upon the chief's determination of all of the following:

(1) The passage of two hundred seventy (270) days from the date of the last disorderly event without the occurrence of any substantiated disorderly events;

(2) Payment of all civil penalties and costs arising from any enforcement action;

(3) Verification by town officials that all deficiencies, if any, discovered during any inspection under Section 11.5-70 have been corrected; and

(4) Satisfactory implementation of the remediation agreement required under section 11.5-70.

(Ord. of 10-20-08(1), § 11; Ord. of 4-3-2017(2))

Sec. 11.5-72. Civil penalty.

Any person who is found to be in violation of any provision of this article shall be subject to a civil penalty in accordance with the Master Schedule of Revenues, Charges, Fees and Fines, Appendix B to this Municipal Code of Ordinances. Each violation of a separate provision of this article, and each day of violation, shall constitute separate offenses. In addition, if the town is the prevailing party in an enforcement action, said person shall also be liable for all reasonable expenses incurred by the town in the enforcement of this article, including, but not limited to staff time, attorney's fees, and costs. All civil penalties shall inure to the benefit of the Town of Brunswick.

(Ord. of 10-20-08(1), § 12; Ord. of 11-16-2015(3))

Sec. 11.5-73. Enforcement.

(a) It is a further violation of this article for any owner to:

(1) Refuse to meet with the police chief as required by Section 11.5-70, or to have the owner's duly authorized agent meet with the chief.

(2) Refuse to enter into a written remediation agreement as required by Section 11.5-70.

(3) Fail to fully implement the remediation agreement in compliance with the timetable specified in the agreement.

(4) Fail to abate or eliminate the disorderly property public nuisance.

(5) Fail to submit the written report to the police chief as required by Section 11.5-70.

(b) The police chief, with the approval of the town manager, is authorized to institute, or cause to be instituted, any and all actions and proceedings, either legal or equitable, that may be necessary or appropriate to enforce the provisions of this article and to seek the abatement and elimination of the disorderly property public nuisance.

(Ord. of 10-20-08(1), § 13)

Sec. 11.5-74. Separability.

In the event that any provision of this article is held to be unconstitutional or otherwise invalid by any court of competent jurisdiction, the remaining provisions of the ordinance shall not be invalidated.

(Ord. of 10-20-08(1), § 14)